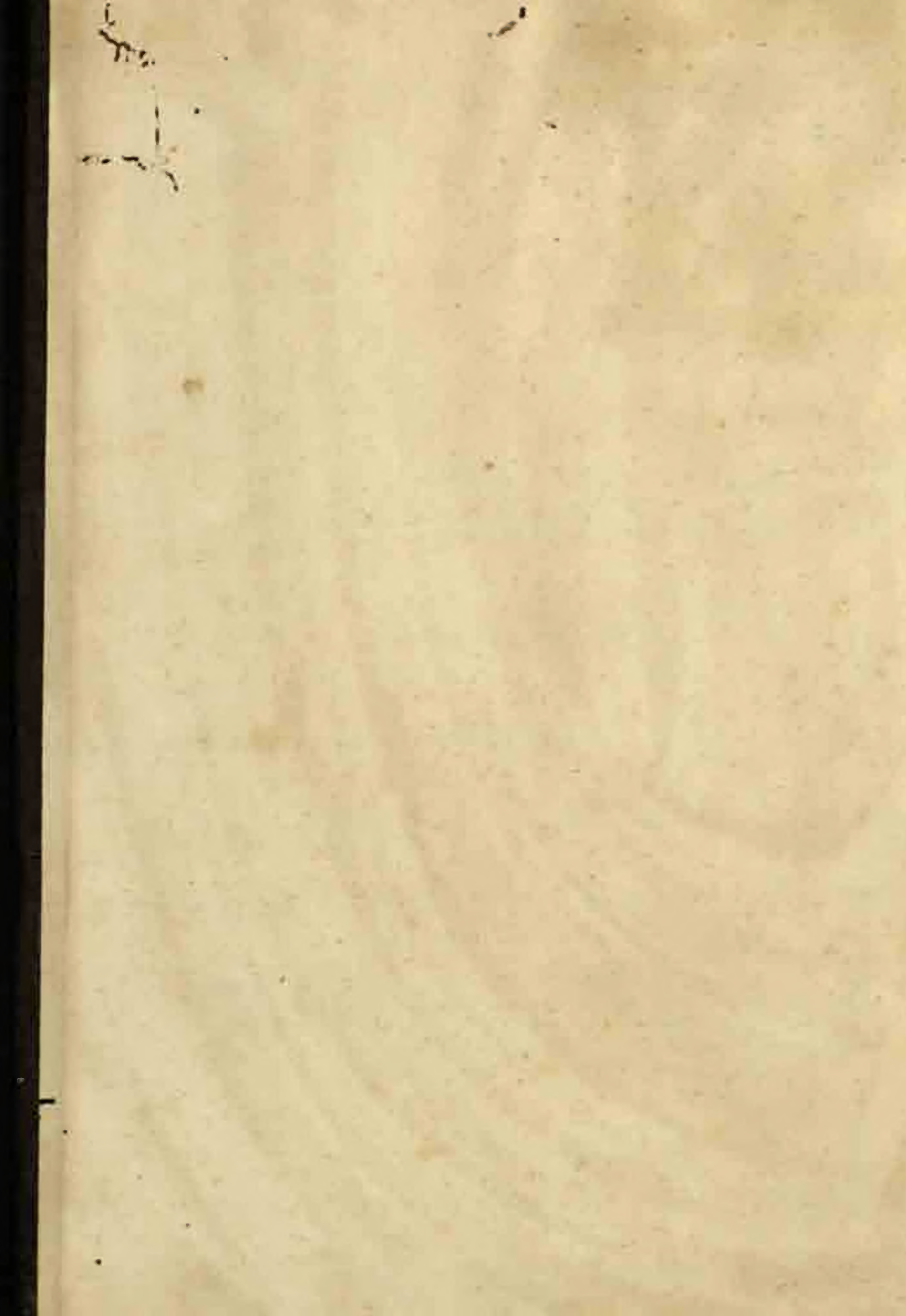
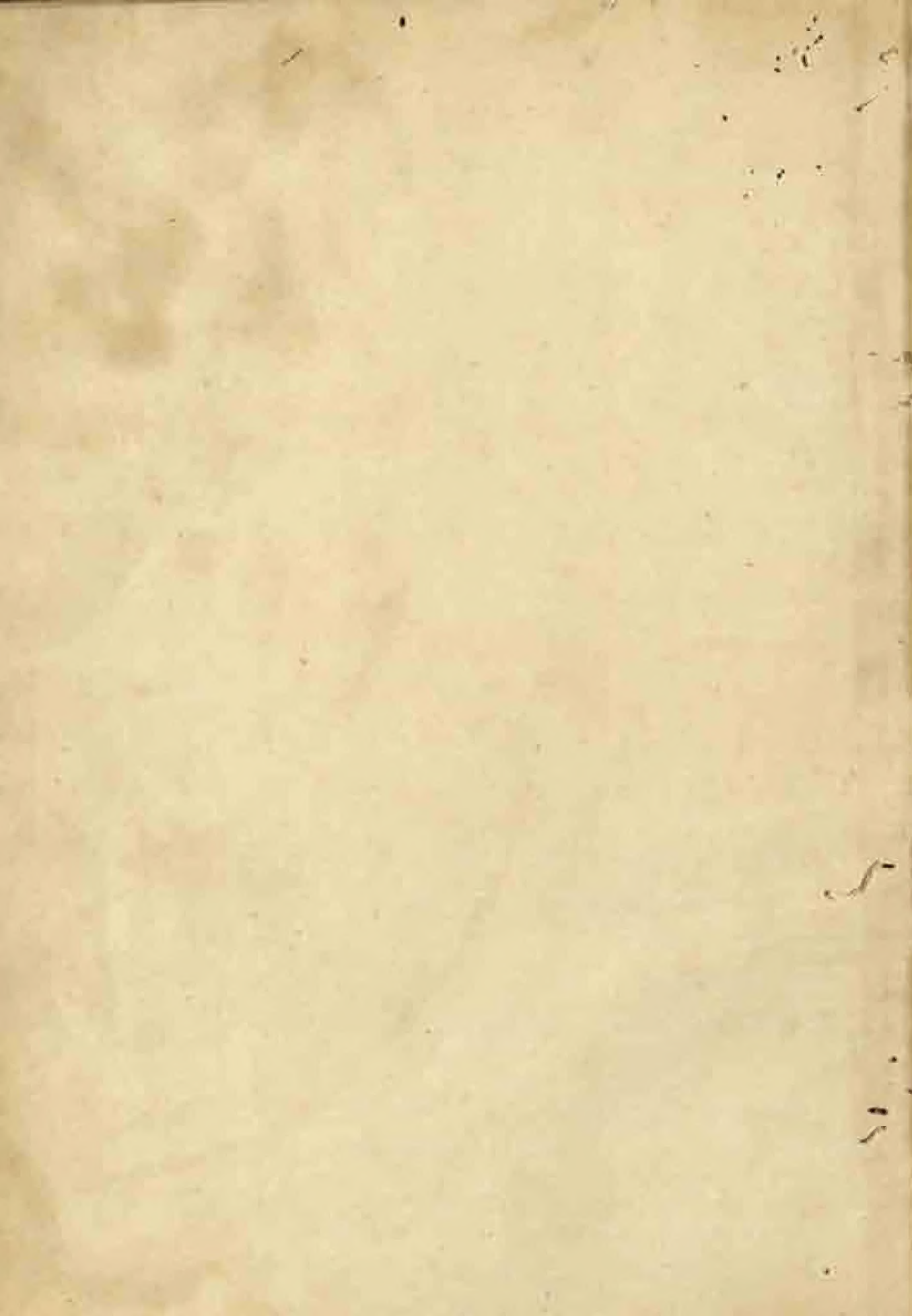


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FIGURES 1 AND 2. BATTLE-LOUTROPHOROS. HEIGHT .928 METRES

BATTLE-LOUTROPHOROS

By J. D. BEAZLEY.

THE vase shown in Figures 1 to 17 is said to have been found at Athens. It has been reproduced, inadequately, in a London sale catalogue.¹ When it was mending in England, I was able, through the kindness of the then owner, to study it, draw it, and have it photographed. It has now been acquired by the University Museum, and Mrs. E. H. Dohan has generously invited me to give a short account of it in the *Journal*.

The two general views [Figures 1 and 2] are from Museum photographs; the details [Figures 6 to 17] are from the photographs taken for me by Mr. George Chaundy before the vase was restored; my drawings also [Figures 3 to 5] give only what is ancient.

The vase is a loutrophoros. Vases of this shape had two uses at Athens: at weddings, the water for the bride's bath was fetched from the fountain Kallirrhoe in such vessels—'loutrophoros' means simply 'bath-carrier'; and they were also placed on the tombs of those who had died unmarried.² The shape is an old-fashioned one: the geometric potter, in the eighth or seventh century, liked to give his vase a long neck which makes it look something like a stork, or a swan, or a goose; and loutrophoroi, from religious and social conservatism, retain this long neck after it has died out elsewhere.

The chief picture on our vase represents a fight, between foot-soldiers and cavalry. Below this is a funeral scene: a long procession of men and youths with their right arms extended in the gesture of farewell to the dead. On the neck of the vase there are two figures, one each side: a young warrior, and a man holding a sceptre. The mouth and the lip of the vase are each decorated with a white wavy line, an ornament traditional in loutrophoroi and derived from the serpent of geometric times. There are white rosettes on the stays which join the thin handles to the neck. The fillets above and below the palmettes on the neck are painted red.

¹ *Sale catalogue Sotheby*, May 27, 1929, pls. 5-6.

² The classic account of loutrophoroi is by Walters in *Ath. Mitt.*, 16, pp. 371-405.



FIGURE 3.



FIGURE 4



Figure 5

Let us take the minor pictures first. In the frieze below the main picture, the door of a house is shown—the corner of the architrave (restored) can just be seen to the right in Figure 13; to the left of this there are four figures turned to the right; to the right of it several others turned to the left. It is the funeral procession; and the gesture as others have pointed out, is that alluded to by Orestes in the *Choephoroe* of Aeschylus:

οὐ γὰρ παρὼν ὤμωξ' αὖ σὸν, πάτερ, μόρον,
οὐδ' ἐξέτεινα χεῖρ' ἐπ' ἐκφορᾷ νεκροῦ.

' . . . nor at thy funeral stretch'd forth an arm.' As to the two figures on the neck [Figures 1 and 2] they are to be taken together: it is the warrior leaving home, and his father watching him leave. A fragment in New York, the neck of a *Iontrophoros*, shows two such figures side by side, the father laying his hand on his son's shoulder.³

The execution of the vase is uneven. The painter has scamped the neck-figures—disliking, perhaps, the narrow field. The funeral-frieze is competent but no more. The main picture is on an altogether different level. It is not equally fine throughout: in particular, the head of one rider is done quite summarily, possibly because of its awkward position close up to the handle; and, in the minor group, the rider is over small and the hoplite over large. But the attacking warriors in the major group, and the horse in the minor, are grand. There are two groups, a five and a two. The two consists of a bearded warrior, naked, Attic helmet on head, shield on arm, sword slung round him, running at a horseman with his spear [Figures 5 to 10]. The horseman, lightly bearded, has his shoulders turned towards us, wears chlamys and petasos, holds the reins in his left hand, and wields a spear in his right. Parts of the horseman are missing, and in his opponent, besides right forearm with hand, much of the legs, but the left foot is preserved.⁴ And now the larger group [Figures 3, 4 and 11 to 17]. It consists of five figures: numbering from our left to right, 1, 2, 3, 4, 5. 1 and 2 form one party; 3, 4, and 5 the other. 1 attacks 3; 2 attacks 3, 4, and 5. On the left, two war-

³ 07,286,70: by the painter of the Brussels *oinochos*; my *Attische Vasenmaler* (*Att. Vas.*), p. 289, No. 3.

⁴ I took what shows near the lower right-hand corner in Figure 4 to be part of this warrior's right heel, the foot being extended forward and the heel off the ground. The remains seem to have been painted over by the restorer.

rriors advancing. First, a bearded man, armed cap-a-pie, with corslet, short chiton, greaves, crested helmet (of the so-called Thracian shape), sword (part of the baldrick remains), and shield: his right arm is raised,⁵ striking downwards with the spear. On this warrior's left his young



FIGURE 6

companion advances with raised spear: he is naked; he carries a shield, has a sword slung round him (part of the baldrick remains), wears a

⁵ Forearm and hand are missing. My drawing, owing to the difficulty of rolling-out from the curved surface to the flat, has had to omit the part of the spear which passes on the higher side of the helmet; and the relation between the lower part of his spear, the diaphragm of his companion, and the arms of his opponent, is not what it should be: see the photograph Figure 12. What shows between the legs, by the way, really belongs to the group already described: it is the horse's tail.

crestless Corinthian helmet. He is seen from behind, and his left foot touches the ground with the toes only, or toes and ball. The other three warriors belong to the opposing party. In the middle of the whole group, a bearded man gives ground, looking back: he wears short chiton.



FIGURE 7

chlamys, and petasos: his left leg is bent sharply at the knee, his right leg is extended frontal; warrior 1 is striking down at him. The middle of the retreating figure is missing, but the motive can be reconstructed by comparison with a similar figure on a stamnos in the Vatican.⁹ The left hand held the scabbard, the lower end of which you can see to the right of the figure: he was drawing his sword. Next comes a horseman, very

⁹ *Mus. Greg.*, ii pl. 20, 2: phot. Alinari 35711: by the same hand a stamnos with a departure scene in the collection of Marchesa Isabella Guglielmi at Rome.

fragmentary. Parts of the horse's legs remain; the top of his head; and the loose mane-hairs just above his shoulder, left longish for mounting;⁷ of the rider, the left foot with half the shank; and part of his breast and neck. The horse is in three-quarter view, both body and head:



FIGURE 8

he starts back, for his master is falling, pierced by a spear. We see a bit of the spear; the wound; and the blood. The shaft must have snapped, for there is no trace of it higher up on the vase. The figure is not easy to reconstruct: to the right of the horse's mane is part of the rider's chlamys-covered chest; then, I think, part of his neck, with a brown line on it marking the great sinew, as in the man to the right, then, to the right of the neck and the close chlamys-folds, two areas about which

⁷ Compare the horse on the Nisibis Krater in the Louvre (Furtwängler-Reichhold, *Griech. Vasen*, pl. 108; *Platt. Mal. und Zeich.*, fig. 492).

I feel doubtful; and then the modern begins. There are many riders tumbling off their horses in works of the late fifth century or of the fourth, and in works derived from models of that period; but none, as far as I can see, very close to ours. A figure in the principal frieze of



FIGURE 9

the Nereid monument;⁸ another in one of the friezes of the Trysa Heroon;⁹ a third in clay plaques which are Roman, but based on classical Greek models;¹⁰ a fourth on an Apulian bell-krater in Naples;¹¹ all these resemble ours in some respects, but differ from it in others. The last

⁸ Smith 860: *Mon.*, 10, pl. 13, 37; Brunn-Brückmann, 214, above; by 'Master II' (Schuchhardt, *Ath. Mitt.*, 52, p. 102). Cf. also Smith 862, *Mon.*, 10, pl. 13, 41, by 'Master I' (Schuchhardt, *ibid.*, p. 103).

⁹ Benndorf, *Heraon von Gjölboschi*, pl. 15, slab 18 = Loewy, *Polygnot* fig. 72.

¹⁰ Von Rohden and Winnfeld, *Architektonische Terrakotten der Kaiserzeit*, pl. 130.

¹¹ Naples 2409: small photo. Sommer 11672, 6, 2. Riders pulled off their horses occur in the archaic period, for instance in pictures of Achilles and Troilus like that on the Brygos painter's cup in the Louvre (*Mon. Piot*, 16, pl. 15 = Roscher, *Lex. der Myth.*, s.v. Troilos, p. 1226), but they have not hitherto been seen to become a feature of battle representations till the twenties or the teens of the fifth century. Allied to these fallers are such wounded figures (not on horseback) as on the shield of Athena Parthenos (Schrader, *Zu den neuen Antiken-funden im Hofen des Piraus in Sitz*, Preuss. Ak., 1931, p. 6), or at Trysa (Benndorf, *op. cit.*, pl. 13, slab 14).

warrior on the right is bearded, wears chlamys and petasos, and holds his spear at neck-level nearly horizontal: he is seen from behind; he is retreating, but turning round towards the enemy, ready to strike: only the upper third of him remains, but the attitude must have been some-



FIGURE 10

thing like that of a man on the Themis cup in Berlin¹²—right leg in profile with the knee bent, left leg extended, with the back of it towards us and the heel off the ground.

The subjects most commonly depicted on loutrophoroi are what one would expect, considering the special functions of this type of vase. Funeral scenes: in the chief place, usually, the prothesis—the dead lying on a couch with mourners round him;¹³ but sometimes, in the later part of the fifth century, such gatherings at the tomb, or with the tomb represented, as appear on sepulchral lekythoi.¹⁴ And scenes con-

¹² Furtwängler-Reichhold, *Griech. Vasen*, pl. 140, to the right in the deer-hunt. By the Codrus painter.

¹³ Prothesis: see Zschietzschmann in *Ath. Mitt.*, 53, pp. 18-47, and Haspels in *Hildka Archæologická*, 1931, pp. 229-232.

¹⁴ Athens 1700 (*Eph. arch.*, 1893, pl. 2; by the Kleophon painter); the Hague, Scheurleer Museum (woman at the tomb); Athens (*Ath. Mitt.*, 16, p. 381); Heidelberg K 13 (Kraiker, pl. 42, 214); Berlin and (*Ath. Mitt.*, 16, pl. 3) Schliemann collection; Athens, new acquisition (by the same as the last).

nected with marriage: the wedding procession, or the bride admiring the gifts. But a third kind of picture occurs on certain loutrophoroi: battle-scenes, often with cavalry. Such vases must have been placed at the tombs of those fallen in war. The Philadelphia vase, incomplete as it



FIGURE II

is, is the best preserved of these battle-loutrophoroi, most of the others being extant in fragments only.¹⁵ The latest battle-loutrophoroi belong

¹⁵ Athens 13032 (*B. S. A.*, II, pp. 239-40); Oxford, 1929, 11 (*C. F.*, Oxford, pl. 66, 27-9); Louvain (see *Att. Vas.*, p. 421, Kleophon painter No. 23); Oxford, 1929, 12 (*C. F.*, Oxford, pl. 66, 30); the Hague (by the Talos painter). The fine fragments in Tübingen with a dying youth (Wattinger, *Fasen in Tübingen*, pl. 37, E160) seem to come from a loutrophoros (the white thing is part of a horse, I think, not of a tomb); and other fragments in Tübingen (Wattinger, *ibid.*, E162, E163, E165, E166; Kleophon painter), and two in New York.

to the end of the fifth century. Our vase is one of the earliest. It cannot have been painted before 450: but it cannot be as late as 430. Somewhere about 440 is the probable date: and there was plenty of fighting in the forties and early thirties to which it might refer. Still earlier than



FIGURE 12

our vase is a fine vase-fragment in Tübingen which, in all probability, comes from a *loutrophoros* [Figure 19].¹⁸ It gives head and shoulders

¹⁸ Watzinger, *Vasen in Tübingen*, pl. 27, E90. Fig. 19 is from a photograph by my wife, reproduced by kind permission of Prof. Watzinger. Watzinger thinks of the youth as 'fallen to the ground and supporting himself with his left hand': but his left hand would not reach the ground-level—the shield shows that: it might have rested, of course, on a rock; but I think the analogy of such figures as the Philadelphia *retreater*, or those on *volumen-kraters* in

of a young warrior, wearing chlamys and pilos, in the same sort of attitude as the retreating warrior on the Philadelphia vase, but striking at his pursuer with his sword. To the right, the shield of another warrior. Above the youth's head is part of a handle—from its shape a loutro-



FIGURE 13

phoros-handle. Now the style is that of the painter Hermonax,¹⁷ and the date cannot be later than 450, and is probably distinctly earlier.

the Vatican (*Mus. Greg.* ii, pl. 24, 2; phot. Allnari 35768; painter of Munich 2335) and Syracuse (23928; *Notizie degli Scavi*, 1907, p. 545; painter of the Naples Contamomely) give the true attitude.

¹⁷ *Att. Vat.*, p. 303, no. 57 ter.



FIGURE 14



FIGURE 15



FIGURE 16



FIGURE 17



FIGURE 48. LEKYTHOS
PAINTED BY THE ACHILLES PAINTER
UNIVERSITY MUSEUM
HEIGHT .422 METRES

The Tübingen fragment, and the Philadelphia vase, show that there were battle-loutrophoroi well before the outbreak of the Peloponnesian War.¹⁸ Sometimes a tomb is drawn in the background: this does not mean that the fight is thought of as taking place at a tomb:¹⁹ it only says 'one is buried, or commemorated, here'; and the rest of the picture adds 'who fell in battle for his country.' Elsewhere I have referred to the Attic tomb-reliefs of the time with battle-scenes;²⁰ and to late white lekythoi;²¹ and might have cited the loutrophoros-fragment in the Hague, on which the polyandron is represented—the public sepulchre of the fallen—with the names of the fields on which they fell.²²

There remains the question, who painted the vase. In the chief picture I find the style of an excellent artist, the Achilles painter, so called from a famous amphora, decorated with a picture of Achilles, in the Vatican;²³ and the two attackers in the major group, and the horses, are not unworthy to be put beside his Achilles, or his Euphorbos in the Cabinet des Médailles, or his Satyrs and Maenads in the same collection. In the funeral frieze, however, I do not recognise the hand of the Achilles painter. It is not a question of careful work and careless: we know this artist's careless work as well as his careful. Compare the funeral frieze with the many draped figures, from the reverses of vases by the Achilles painter, which I have figured in the *Journal of Hellenic Studies*.²⁴ There are certain resemblances in the type of drapery, but the drawing is quite different. The Achilles painter tends to straight lines and rectangular forms, our painter's lines swell out and hump. The funeral frieze is, I think, by an assistant or colleague: I conjecture by the Sabouroff painter,²⁵ whom we can see, both in his red-figure work and

¹⁸ Correct therefore my expression in *C. V.*, Oxford, p. 121.

¹⁹ Compare Buschor on white lekythoi, *Attische Lekythen der Parthenonzeit*.

²⁰ *C. V.*, Oxford, text to pl. 66, 27.

²¹ Riezler, *Weissgr. attische Lekythen*, pl. 96 and p. 35; *C. V.*, Gallatin, pl. 23, 2.

²² Wolters, *Eine Darstellung des Athener Staatsfriedhofs in Sitz. Ber. Ak.*, 1913.

²³ A list of his works in my *Att. Vas.*, pp. 371-80 and p. 477, additions in *Vases in Poland*, p. 19. I make no further additions here, except a lekythos recently acquired by the University Museum, with a young horseman on it (*Kunstsammlungen Baron Heyl*, ii, pl. 25; now cleaned). [For a reproduction of this vase see Figure 19.] Another lekythos with the same subject and by the same painter is in Athens (1293: no. 62 in my list): no. 63 in my list (Athens 12133), I now see, is but a school-piece.

²⁴ *J. H. S.*, 34, pp. 184-6.

²⁵ A list of his works in *Att. Vas.*, pp. 262-6 and 475-6, additions in *Vases in Poland*, pp. 32, 34 and 80. For comparison with the youths and men on the loutrophoros, I might quote the Nolan amphora in Copenhagen, *C. V.*, Cop. pl. 151, 2 (no. 31 in my list *Att. Vas.*, p. 261).

in his fine white lekythoi, to have been strongly influenced by the Achilles painter.²⁶ The neck-pictures of our vase should also be his. There is nothing inherently improbable in such division of labour: and I have noticed a good number of what seem to me certain instances on vases.²⁷

²⁶ See *Att. Vases*, p. 262.

²⁷ These I hope to put together some day: see meanwhile *C. V.*, Oxford, ii, p. vi.



FIGURE 19. VASE-FRAGMENT IN TÜRINGER

FOUR VASES FROM THE HENRY C. LEA COLLECTION

BY E. H. DOHAN

IN THE collection of Greek vases made by the late Henry C. Lea, which, through the generosity of his family, has now been presented to the University Museum, are several notable pieces. Of these the earliest is the eye-kylix of Figures 1 and 2, acquired by the Museum early in 1931 by gift of Arthur H. Lea, Esq.



FIGURE 1. EYE KYLIX. DIAMETER 32 METRES

In about 530 B. C. the first red-figured pictures appeared on Greek vases and at once began to supplant paintings done in the older black-figured style. No class of vases reflects more clearly the conflict of the two techniques than the eye-kylikes, cups with a small round picture in the interior, and on the exterior two pairs of apotropaic eyes. Some of these cups are decorated entirely in the older black-figured fashion; on others artists have combined the two techniques, painting a black-figured picture on the inside, and red-figured eyes on the outside.¹

At the same time that this change in technique was being effected, came a change in the character and disposition of the design. Artists were no longer satisfied to paint merely a gorgoneion or a cock in the

¹ For a partial list of such cups, see Walters, *J. H. S.*, 29, p. 110.

interior field, or willing to relinquish the entire exterior field to eyes, stylized noses, and palmettes. Instead human figures were used for the interior picture and on the exterior also men made their appearance between the eyes or adjacent to handles. For these figures of the exterior



FIGURE 2. INTERIOR OF EYE KYLIX

a mixed technique was sometimes used, the obverse, for example, being black-figured, and the reverse red-figured.

Most eye-cups which show a human being on the interior show some kind of figure, if not men at least sphinxes or a pegasus or a plant on one or more faces of the exterior. Exceptions are the cup in the

Ricketts-Shannon collection, signed by Hischylos as maker [Figure 3],² Villa Giulia 18587,³ and our cup. The pictures inside these cups are black-figured. On the outside are red-figured eyes, with the usual stylized nose and eyebrows, and, adjacent to the handles, palmettes.



FIGURE 3. EYE KYLIX IN RICKETTS-SHANNON COLLECTION

The shape is very like the second type of red-figured kylix given by Caskey in his *Geometry of Greek Vases*, page 177. The handles are placed half way between the rim and the reserved line below the exterior decoration. A moulding, bordered above and below by reserved lines, defines the division between stem and bowl. The lower surface of the foot is reserved and flat, but there is a broad band of black glaze within the stem. The clay is ruddy in color; the black glaze of the best. Relief lines, the double strokes of which [Figure 4] are plainly discernible, are used for the contours of the red-figured exterior decoration and even

² I am indebted to the Society for the Promotion of Hellenic Studies for permission to reproduce this vase from volume XXIX, plate VIII of their *Journal*.

³ C. P., Villa Giulia, III, H e, pl. 45, 1, 4, and 5.

for the margins of the reserved red above the handles. Between the eyebrows are reserved dots. On both faces of the exterior the painter has corrected the noses by making them smaller.⁴ The nose on one face only is embellished with lines of dilute wash. The centers of the eyes are



FIG. 4. CORRECTED DRAWING OF NOSE.

red dots, the circles outside the bull's eye, separated by incised lines, are red, white, and black, respectively. The leaves of the palmettes are not separated; their cores are reserved.

The attitude of the warrior of the interior picture is closely analogous to that of the snake-slayer of Figure 3; in both cases the shield is held ready on the left arm, and the drawn sword on the right is aimed at a pursuing foe, but in our picture no snake rears his head to explain the warrior's attitude. Our picture, moreover, is done more carelessly. Details like the knotted ends of the chlamys, the bent fingers inside the shield, the lines which indicate the borders of the greaves, become clearer on comparison with the similar details of the Ricketts-Shannon cup.

The foot of our warrior recalls the drawing of the Delos painter,⁵ but the resemblance is not sufficient to attribute the vase to this artist.

A second vase [Figures 5 to 7] from the collection of the late Henry C. Lea was also acquired in 1931 through the generosity of Arthur H. Lea, Esq. The shape is a modified form of the officially inscribed black-

⁴ Cf. Beazley, J. D., *Papers of the British School in Rome*, XI, p. 14.

⁵ *Op. cit.*, p. 15.

figured amphoras which were given as prizes in the Panathenaic games. The egg-shaped body tapers to a small base, the curved profile of which corresponds to that of the neck. A moulded band separates the neck from the shoulder. Patterned ornament is reduced to a minimum: a



FIGURE 5. AMPHORA OF PANATHENAIC SHAPE.
HEIGHT .494 METRES.

band of stopped meander alternating with saltire-squares beneath each picture. On the obverse is a flying Nike, in her right hand a flower, in her left a lighted torch. On the reverse is a youthful athlete wrapped in a himation and carrying a staff.

The vase is not free from restorations. It has been broken and the seams between the fragments, widened first by corrosion and then by



RED
DILUTE WASH
ORIGINAL DRAFT

FIGURE 6. NIKE WITH A THURIBLE

filing, are filled with plaster. Several small portions are missing. When the vase was acquired, the entire reverse surface was painted black; the reserved picture had been damaged and perhaps the greenish-yellow tinge of the adjacent dark glaze did not meet the dealer's requirements for color. On the obverse, the restored parts are luckily few. One crack traverses the pointed ends of the himation, a second intersects the body near the waist, and a third crosses the wings. The right hand is defaced.

Over her chiton of sheer, crinkly material the Nike wears a close-fitting garment of heavier stuff, which is finished below with a broad border on which the dots are combined with crosses.⁶ About her head is tied a kerchief, beneath which short locks escape over the forehead and longer tresses on the neck. She wears earrings indicated by a dot and circle. The iris of the eye is represented by a dot set well toward the nose; the eyelids are separated at either end. The thurible is of metal.⁷

The figure resembles closely the work of the Berlin painter whose style, thanks to the genius of Mr. Beazley, is now so well understood.⁸ Compare the face, the ear, the earring with those on the fragment of Athena in Bryn Mawr⁹ or the face and general pose of our figure with those of Ganymede on the Louvre Krater.¹⁰ If further confirmation is needed, there are the lines which edge the neck and sleeves of the chiton; those marking its lower margin; the drawing of the beautiful feet, especially the ankle bones and the long thin toes; the sparing use of the relief line for contours; the alternating attachments of the saltire squares.

All of the amphoras of Panathenaic shape are placed early in the long career of this artist, whose earliest pieces antedate the beginning of the fifth century and whose latest reach to 460 B. C. Perhaps our vase should be regarded as one of the earliest of the amphoras of Panathenaic shape. The wings and feet, curiously enough, are headed in opposite

⁶ Cf. the garment worn by Athena on the Andokides amphora in Munich. *F. & R.*, pl. 4a.

⁷ On thymiasteria see Wiggand, *Bonner Jahrbücher*, pp. 46-49, pls. 1-6. The thurible on our vase is type No. 76 on pl. 3.

⁸ See *Bilder Griechischer Vasen*, herausgegeben von J. D. Beazley and Paul Jacobsthal, II; Beazley, J. D., *Der Berliner Maler*, where a complete bibliography of the author's earlier studies of this master is given. Mr. Beazley has recently kindly confirmed the attribution of the Lea amphora to the Berlin Painter.

⁹ Beazley, *op. cit.*, p. 16, pl. XII, 5.

¹⁰ *Ibid.*, p. 16, pl. 29.



FIGURE 7. ATHLETE

directions, and the band of patterned ornament is applied without regard to the central axis of the face of the vase.

The sadly damaged figure of the athlete on the reverse [Figure 7] doubtless represents the boy to whom Nike is flying with her gifts, just as on the Boulogne amphora, Eros on the obverse is flying toward the boy of the reverse picture.

A third vase [Figures 8 and 9] from the Henry C. Lea collection which was presented to the Museum ten years ago by the late Nina C. Lea has not as yet received the attention that it deserves, not, at least, of late years or in this country. In the German Institute in Rome, however, so Mr. Beazley has kindly informed me, there exists a drawing of the vase, bearing the legend: '*scoperto a Poggio Gaiella presso Chiusi inviato da D. Luigi Dei con lett. d.d. 10 Giugno 1841.*' Like other vases of the Lea collection, it was purchased in America many years ago. It has been mended but no parts are missing.

On the obverse a naked girl, cup in one hand, ladle in the other, looks back over her shoulder at the ardent boy of the reverse who hurries to the delights of the banquet with a garlanded wine jar in his hands. Around the neck of the girl is a necklace on which is strung a bead or amulet, and about her right thigh is strung another bead. Relief lines are used for the few interior markings and for the entire contour of the girl except for hair and nipples which are reserved. Necklace, thigh-band, and the iris of the eye, thus indicated to be blue, are rendered in dilute wash. The boy on the reverse wears a garland painted red. The outer margin of his hair is reserved; short locks on neck and forehead are indicated by rows of dots. Relief lines in this figure are used for interior markings and for the contours of face, neck, and that part of the shoulder which is so close to the neck as to make the use of a brush difficult. The rest of the contour is outlined with the brush.

Where this preliminary brush work underlies the coat of black glaze applied to the body of the vase, the glaze is well preserved, but in other areas, particularly on the obverse, the glaze has cracked and gone, leaving in some cases patches of red color, which plainly underlie the black glaze. Miss Richter²¹ has explained such patches as remnants of the *μίλτος* which was applied to the clay in a leather-hard state before the

²¹*The Craft of Athenian Pottery*, pp. 53-59.

glaze was put on. Dr. Zahn on his visit to the Museum explained this red color in a different way: 'Whenever the glaze of Greek vases did not get in the oven sufficient air to become thoroughly oxidized, when for example vases touched one another in the kiln, the glaze turned out red instead of black. In the case of this vase the first application of



FIGURE 8. KRATER, PAINTED BY MYSON. HEIGHT 399 METRES.

glaze was deemed unsatisfactory and a second was applied.'

A column-krater with a single figure on both obverse and reverse is sufficient in itself to suggest Myson. The massive shoulders, rather artificially raised, the prominent underlips and chin,¹² the red garland, the

¹² Compare the boys on the column-kraters in Cracow and New York; Bentley, *Greek Vases in Poland*, pl. 7, 1 and 2.

curves of the ears and the small dots to represent curls about the margin of the hair, indicate Myson as the artist of our vase. Mr. Beazley has kindly confirmed this attribution and adds that Myson is here 'getting like the Pig painter who continues the style of Myson, and might even be Myson in his later years.'



FIGURE 9. REVERSE OF KRATER, PAINTED BY MYSON

A fourth vase from the Lea collection [Figures 10 to 13] presented to the Museum early in 1931 by Arthur H. Lea, Esq., constitutes an important acquisition to our collection of Greek vases. If compared with the Lea eye-cup [Figure 1] it will be seen that it is considerably smaller; that the transition from stem to bowl is effected with greater

subtlety; that the base of the foot is no longer flat but sloping and broken by a moulding. The form, in fine, is the perfected type of *kylix* used in the best period of Greek ceramic art. The two pictures on the exterior of the cup [Figures 12 and 13] show a masterly portrayal of the favorite



FIGURE 10, CENTAURMACHY CUP. HEIGHT .234 METRES

themes of Greek sculptors. On either side a battle rages; on the one a centauromachy, on the other a battle of two Greeks against a barbarian, contests the one against inhuman, the other against human foes.

But first let us look at the entirely unrelated picture of the interior.¹³ It is larger than the corresponding picture in the eye-cup and is encircled by a band of stopped *maiander*. As on the Myson krater, a boy is ready for the pleasures of the banquet. The krater is wreathed; with an *oinochoe* he fills his cup, but someone calls. He turns to look and the wine streams from his jug. The cup in his hand is not like the one which we are studying; its base is flat and its stem straight and slender. At the juncture of bowl and stem are two protuberances which look like rivets. Probably the cup was of metal. Within the circle of *maiander* is a meaningless inscription.

Exceptionally clear traces of the technical processes employed by our painter may be seen in Figure 11. Before the cup was fired, when the clay was leather-hard, the outlines of the figures were laid out with a blunt engraving tool. The relief lines which outline the entire picture except the reserved contour of the crown of the boy's head, followed the

¹³ Cf. Bicknell, C. D., *J. H. S.*, 41, pp. 225-230.

grooves made by this instrument, and the first brush strokes in black glaze further concealed them. The grooves remain visible only where details like the hand or the cup were superimposed upon the first sketch, or where the first sketch was altered. Thus portions of the course of



FIGURE 11. INTERIOR OF CENTAUROMACHY CUP

this tool may be seen where the lines of the abdomen cross the field of the kylix, and where that of the buttock crosses the line of the left hand. Alterations of the first sketch may be seen along the calf of the boy's left leg, the left shoulder, and the upper contour of the jug. The inner contour of the boy's left thigh was twice corrected, and as to the lower margin of the jug, it seems that the artist played idly with his tool,



FIGURE 12. CENTAURHACHY

RED
DILUTE WASH
ORIGINAL DRAFT

until he arrived at the curve which suited him. That the course of the interior relief lines was also traced with the engraving tool is shown by the grooves across the field of the kylix, where it breaks the frontal relief line. A scrutiny of the boy's left calf shows that there was a preliminary sketch for some, at least, of the interior markings in dilute wash. On the shoulder of the krater appears a part of a discarded preliminary sketch which I cannot make out.

Let us call the face of the vase with the centauremachy [Figure 12] the obverse. The figure of the centaur is boldly laid on across the center of the field. His only defensive armor is a leopard's skin tied about his shoulders and held extended on his left arm like a shield; his only weapon a tree broken from his forest home. This monstrous bludgeon has already bruised and torn the back of the warrior on the right, but he is far from being *hors de combat*. His lithe and agile body, protected only by helmet, shield, and greaves is clear of the centaur's front hoofs and his spear is aimed straight past the leopard's skin at the centaur's heart. His comrade on the left, however, takes no chances; holding his shield before him as protection if the rear hoofs should fly up, or the tail give a wicked swish, he peeks over its edge, and plunges in his spear between the hindquarters of the beast.

The composition is arranged with great skill. The right foot of the warrior on the left is extended to fill the empty space beneath the handle and almost meets the foot of the right warrior on the reverse [Figure 13]. Similarly his other foot is extended to meet the left foot of the warrior on the right. The space above the centaur's back is admirably filled by the tree and by the centaur's right arm. The torsion of the outer figures adds to the unity and compactness of the picture.

Alterations of the preliminary sketch are notable on the extended leg of the warrior on the left, which was originally drawn smaller; and on the right foreleg of the centaur. The grooved line of the preliminary sketch for the right contour of the warrior on the left may be traced across the field of his shield; that of his spear across the centaur's flank; that of the baldrick across the shield, the warrior's right arm and the centaur's tail. The curved line on the hindquarter of the centaur was outlined with the engraving tool before being painted in dilute wash. Red is used for the leaves of the centaur's tree, for the double fillet



RED
DILUTE WASH
ORIGINAL DRAFT

FIGURE 13. BATTLE OF GREEKS AND A BARBARIAN

about his head, for the blood that gushes from the wound of the right warrior, for the part of the baldric that shows at the extreme left of the picture. Relief lines outline the entire picture except the long locks on the neck of the centaur.

Like his contemporaries, the artist is interested in foreshortened surfaces. The curved rim of the shield of the warrior on the right is indicated by shading; but the blazon—a bull's head—is cut in half according to the old black-figured tradition of rendering in perspective the picture on a shield.

On the reverse, the center of the picture is occupied by a dying warrior. Blood gushes from his wound; his eyes are already unseeing, but he holds his shield high, for how else could the central space of the picture be filled? The curved figure of the Bowman serves admirably to bound the picture on the left; the straight lines of arms and arrow lead the eye over the curved surface of the cup toward the boy on the right. The archer wears a barbarian cap and high boots. His skill as a Bowman is suggested by the torsion of his figure, as if the artist would tell us 'this archer can aim straight from any position.' The two raised fingers of his right hand further bespeak his effortless skill. The guileless boy rushing up on the right is no match for such an adversary.

Originally the artist intended to foreshorten the shield of the dying warrior. Incised lines for an elliptical contour may be seen crossing the field of the shield. These lines like the circles of the final drawing were incised evenly and cleanly with compasses. In the figure of the Bowman, alterations may be seen of the line of the buttock, of the course of the relief line which marks the upper contour of the abdominal region, of the right thigh, of the flap of the quiver. The original sketch for the right contour of the figure of the boy on the right may be traced in the field of the shield. The inscriptions on both obverse and reverse are meaningless.

The identification of the painter of this cup I owe to Mr. Beazley. It is by the Foundry painter.¹¹

¹¹ A list of vases from the hand of this artist—eleven cups and a skyphos—is given in Beazley, J. D., *Attische Vasenmalerei des rotfigurigen Stils*, pp. 186 and 187. Only three of this list are in America, one in the Fogg Art Museum, unpublished; two in the Museum of Fine Arts, Boston, lately published in ideal fashion by Mr. L. D. Caskey (*Attic Vase Paintings in the Museum of Fine Arts, Boston*, pls. XI and XII, pp. 26-29). The Brussels cup, ninth in Mr. Beazley's list, is now illustrated in *C. F., Cinquante-deux III*, 1 c. pl. 3, 1.

Unmistakable resemblances to the figures on the other vases in the list may be seen on our cup. Compare, for example, the head of our centaur with that of the vomiting banqueter on the Lecuyer cup in Corpus Christi College, Cambridge¹⁵; or the interior markings of the abdominal muscles of the bowman with those of the wrestlers on the London cup¹⁶; or the rectangular toes of the right foot of the dying



FIGURE 11. MUNICH CUP. CENTAUROMACHY A.

warrior with those of the votive foot on the Berlin foundry vase¹⁷ or of the left foot of the banqueter just cited; or the shading and blazons of the shield and the shield-apron on our cup with those on the Harvard and Brussels cups.

The addition of the Lea cup to the list of works by the Foundry painter involves another addition also. Mr. Beazley points out to me that its sister-cup is Munich 2614,¹⁸ which, by kind permission of Dr. Sieveking of Munich, is reproduced in Figures 14 and 15. The resem-

¹⁵ Bicknell, *loc. cit.*, pl. XV.

¹⁶ Gardiner, F. N., *J. H. S.*, 26, pl. XIII.

¹⁷ F. R., *Vasenmalerei*, pl. 135.

¹⁸ F. R., 6, pp. 133-135.

blance of the centaur of Figure 14 to our centaur and the similar arrangement of both obverse and reverse is apparent. The posture of the boy on the interior is very like that of the fluting girl on the Lecuyer cup¹⁰; and the strange blazon on the shield of the interior is exactly paralleled as Mr. Caskey has observed²⁰ by that on the Boston cup with arming scenes.



FIGURE 15. MUNICH CUP. CENTAURMACHY B.

Two other vases which Mr. Beazley thinks will be added with the Lea cup to the list of works of the Foundry painter are the Munich cup 2640²¹ and Villa Giulia 50559.²²

Pictures of battles were not hitherto included in the works of the Foundry painter, unless the wild wrestling match on the London cup be called a battle. The pictures on our cup—far more than those of its

¹⁰ Bicknell, *loc. cit.*, pl. XVI.

²⁰ *Op. cit.*, p. 27. The blazon is here called a 'nondescript dot' and compared to the blazon on the Harvard kylix. This we have seen to be a bull's head cut in half. Perhaps the 'nondescript dots' are halves of gorgoneia.

²¹ *F. R.*, pl. 36.

²² Hartwig, *Meister-Schulen*, pl. 54.



FIGURE 16. PHILADELPHIA CUP, Obverse



FIGURE 17. FORGED COPY, METROPOLITAN MUSEUM



FIGURE 18. PHILADELPHIA CUP, REVERSE



FIGURE 19. FORGED COPY, METROPOLITAN MUSEUM

sister-cup in Munich—show that the artist in his most inspired moods could convey the stress and strain of battle as well as the delights of the banquet. Brygos would perhaps have done it better. His silene on the fragments in Castle Ashby⁴³ is more of a beast than is our centaur; his figures are more vibrant. But the boldness and beauty of the drawing on our cup proclaim the Foundry painter a great artist, a worthy contemporary not only of Brygos but of the sculptors who carved the Aeginetan pediments in 490-480 B. C.

One word about the history of the Lea cup. It was purchased, as nearly as Mr. Arthur H. Lea can ascertain, in the eighties. In 1896 the Metropolitan Museum purchased a kylix with similar paintings, which was long on exhibition but is now relegated to the case of forgeries in the study-room. Mr. Hugh Jacobs, on his recent visit to America, called my attention to the fact that the pictures on this forged vase [Figures 17 and 19] copy exactly those on the Lea cup.

⁴³ *Papers of the British School at Rome*, XI, 1929, pl. X, 4.

A PORTRAIT OF THE LATE ROMAN EMPIRE

BY VALENTIN MÜLLER

THE fourth century A. D. marks a turning-point in the history of the Mediterranean World. Permanent war against invading barbarians, inner civil struggles, social unrest and subsequent economic decline during the third century had brought the powerful Roman Empire near the abyss. But it was saved once more. The energetic Diocletian created a new political order and after a brief renewal of the struggle, Constantine, called the Great, consolidated the Empire for a new period of its history. He shifted the capital from Rome to the East, to Constantinople, leaving the West to the future task of building up the mediaeval world by civilizing the intruding Germans, whilst the later Byzantine Empire in the East formed a barrier which saved Europe from being overwhelmed by Asiatic invasions and preserved the seeds of ancient civilization with which to sow later the soil of Eastern Europe, as well as that of the West. The new Empire needed a new mind, for new civilizations are born of new ideas. The classical conception of the world as a harmony in which man, endowed with free will, humanized himself in conformity with universal laws, had completed the cycle of its historical life, incapable to prevent mankind from being extinguished in the struggle which everywhere prevailed. But, already, a new idea had arisen, giving the world a new order. The call was no more for freedom, but for authority; man was no more the center of the world but a tiny mote before an overwhelming Supreme Being, and his aim was to save his soul from his innate sinful nature into a transcendental world. Christianity, first a despised sect, grew stronger and stronger until, purified by persecutions, it formed a community comprehending the soundest forces for constructing a new culture, so that it became the backbone of the new Empire.

Styles of art change in conformance with the general evolution of the period. The whole unrest of the third century, political, social and mental, is represented in a head of the emperor Gallienus [Figure 1].

There is nothing but movement all over it; it is not only turned to the side but also tilted slightly upwards, and the look of the eye cuts at an oblique angle in the direction in which the head faces. The smooth flesh is in sharp contrast to the curls of the hair and of the beard. These are



FIGURE 1. HEAD OF GALLIENUS
MUSEO DELLE TERME, ROME

different in length and fall in irregular but distinct waves, whereas the small curls of the beard form a continually excited surface, the outline of which is an undulating curve. The eyelids and the wrinkles on nose and forehead are sharp and hard lines, which cut the soft flesh. The relief is high, the eyes are deep set, the curls of the hair are undercut; beneath the lip is a hollow, so that deep shadows break the light surface

into contrasting parts. Then the change took place; the head of Constantine [Figure 2] proves that he achieved his task and consolidated the empire. There is no turn either to the right or to the left, but the head is directed straight forward. A rigid symmetry keeps all parts in



FIGURE 2. HEAD OF CONSTANTINE
PALAZZO DEI CONSERVATORI, ROME

an inflexible position, and a system of straight lines put together at right angles—that is, the lines of the eyes, the nose, the mouth—forms a backbone for the whole structure. The hair is a solid mass, giving no freedom to the individual curls, but moulding them by regular incisions into a decorative pattern which frames the forehead with a sharp and ornamental outline and forms a curve which frames the whole face. The

lids of the eyes are extremely heavy and sharp and the eyebrows are emphasized by short parallel lines. The planes of forehead and of the cheeks are simple and large by reason of rigid subtraction of all but the main features. The result is monumental grandeur which breathes the

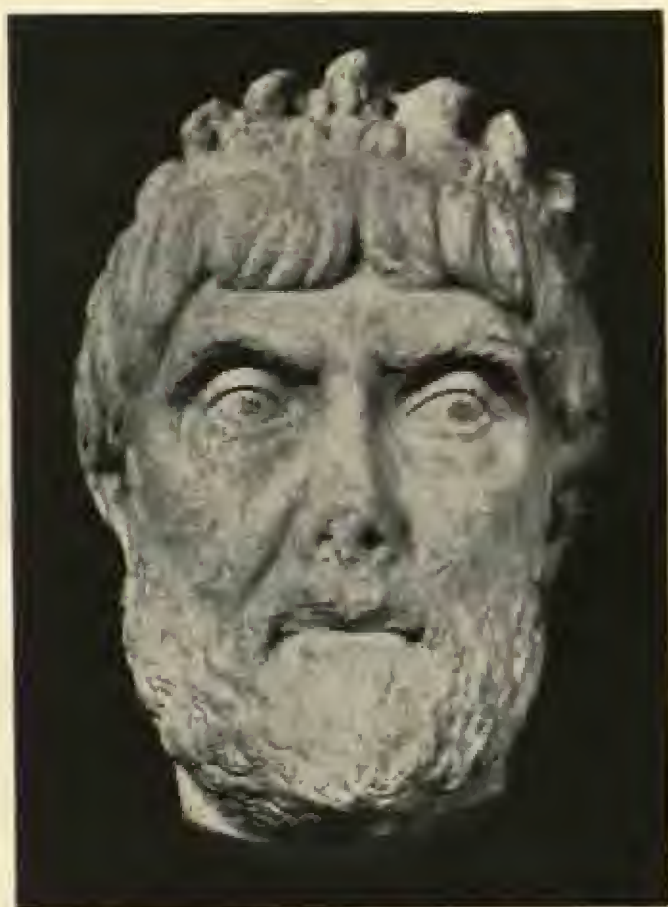


FIGURE 3. HEAD OF A PRIEST
UNIVERSITY MUSEUM
HEIGHT 30 METRES

calm security and sublime majesty of the unassailable ruler of the world. Whereas the look of Gallienus reveals a trace of pride, the last vestige of the classical appreciation of human beauty, the eyes of Constantine seek a spiritual world far above the vanities of life.

The University Museum possesses a fine head [M. S. 215 and Figures 3 and 4] dating from the same fourth century, as a comparison with the

Constantine makes obvious at the first glance. We find the same frontality and the same architectural framework formed by the lines of deep shaded eyes, the nose, and mouth. The same symmetry which marks the face as a whole is found also in the hair with its division in the middle.



FIGURE 4. HEAD OF A PRIEST
UNIVERSITY MUSEUM

of the forehead and the regular locks to right and left. The expression, however, is slightly different, not because the head of Constantine depicts an emperor whereas the Philadelphia head represents a private man, but because of the interval of time which had changed the style. The tendency was towards a steadily increasing spiritualization. This is rendered by emphasizing the expression of the eyes, which become more and more

the most important and striking feature of the whole face. At the same time there is a tendency to elongate the face from the eyes downward; the cheeks with their long smooth planes are no longer of the same value as the eyes but are used merely to set them off. Nature is no longer



FIGURE 5. HEAD FROM APHRODISIAS; IN ISTANBUL

rendered in its true form as an organic structure, each part being allowed to have its own life, but is modified by an external principle which selects the forms according to the importance they have for expressing this principle. The Philadelphia head stands about half way between that of Constantine and the full development of the tendency which is shown by a head found in Asia Minor [Figure 5] and dated at the

end of the fourth century. The incommensurability between body and soul, according to the contemporary dogma of the Christian faith, and the mastery of the flesh by the immaterial soul is now apparent. The look of the eyes is not the expression of natural forms but comes out of

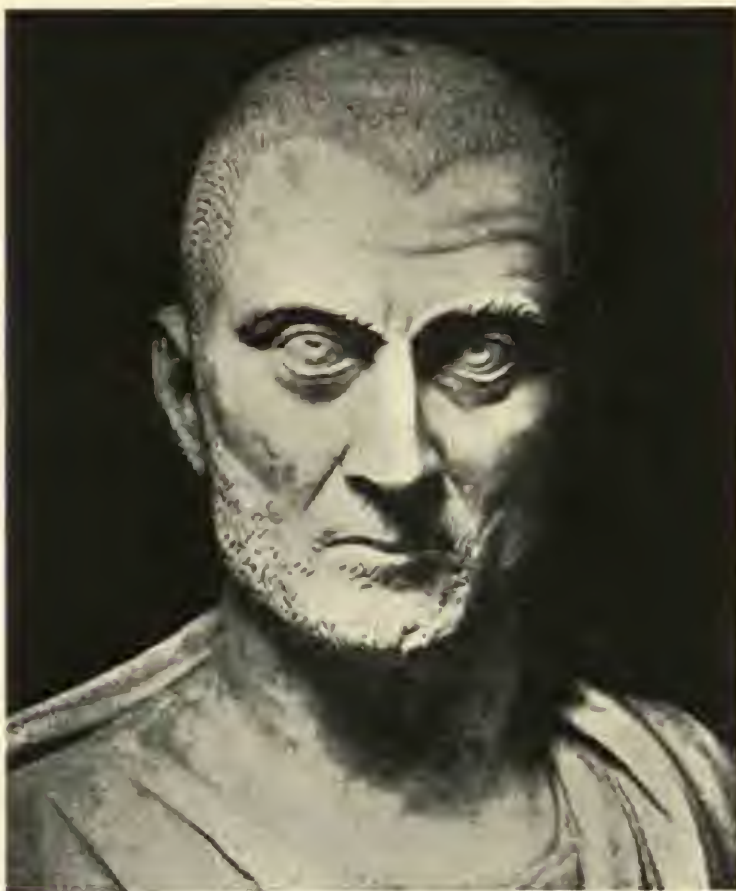


FIGURE 6. HEAD OF DOMITIANUS, THE LATERAN, ROME

a transcendental world beyond them. A certain abstractness rules the face and changes the organic forms into mere schemes. Hair and beard are sketchy lines and the geometricized eyes miss the swelling roundness of nature. The head at Philadelphia obviously does not go so far in subduing nature to spirituality but preserves a more organic structure. Its date, therefore, can be fixed as approximately the middle of the fourth century A. D.

The art of the Roman Empire was not everywhere entirely homogeneous, but slight differences always existed between the art of the eastern and that of the western half. Comparing the head in Philadelphia with the one in Rome [Figure 6], dated some years earlier, we observe a difference as regards the conception of style by the artist. The Roman head shows sober realism. The forms are somewhat hard and sharp, they stick and cling where they are placed and lack a wider swinging and harmonious melting one with another. Short and strictly limited lines are incised into a hard and solid mass. The manner is cubistic and linear. The head in Philadelphia is built up in a different way. It seems to have a looser and less firm structure. The different parts, that is, bones, flesh, hair, are more independent, but, nevertheless, they correspond to each other and form, therefore, a harmonious whole. The lines are not sharp or hard, but are more rounded with soft and gently flowing curves. A remnant of the classical ideality seems to be preserved, now embodied in the new spiritual life, which—because not enforced by a powerful will, but an outcome of the whole personality and therefore relying on a solid background—breathes a full, free mastery of itself. This kind of style is rather Greek than Roman. An analogy in the rendering of the hair is found in a head now at Brussels coming from Aphrodisias in Asia Minor [Figure 7]. Especially the short finely carved locks of the beard and the form of the hair behind the ear are very similar, while the hair over the forehead is arranged in longer locks, besides the deeper incisions, not unlike those of the head referred to above. Also the striking naturalistic modeling of the cheeks is the same in the two heads in Philadelphia and Brussels. The attribution by style of the head in Philadelphia to the Greek art of Asia Minor is corroborated by the place of purchase, Constantinople, where it was bought by H. V. Hilprecht from a native of Caesarea. The condition is fairly good, the tip of the nose is broken off, and there are some damages to the mouth and erosion of hair and beard. The pupils of the eyes are represented by circular hollows carved in.

Having fixed the date and artistic school to which the head belongs, we have to look at the personality represented. This is indicated by the peculiar crown on the head: on a thick ribbon eleven human busts representing deities are placed, the middle one of which is just above the

division of the front hair and emphasizes the axis of the head. Such crowns were worn by priests; and several examples with the same adornments as ours are preserved, coming also from Asia Minor. The man is therefore a pagan priest. Paganism was not abolished by Constan-



FIGURE 7. HEAD FROM APHRODISIAS
MUSÉE DE CINQUENTAINE, BRUSSELS

tine, but, after having seen a renaissance under Julian the Apostate, lasted until A. D., 390 when Theodosius prohibited the sacrifices. Paganism had undergone also a deep change since classical times, and the art of the fourth century proves that there is not a difference between a specific Christian style and a pagan one, but a uniform development. Paganism, too, has been spiritualized. Our portrait shows

a distinguished, highly educated man, without doubt, gifted with oratorical talent, very common at that time among pagan as well as Christian priests. Deeply imbued with the Greek philosophy, he was a fervid defender of the faith in the service of which he is represented and a powerful personality showing an austere earnestness and an inflexible conviction. However, the deep set eyes with the dark hollows above reveal disappointment and uneasiness; he adhered to a dying world soon to be overwhelmed forever.

For the permission to publish the new head and for other help in writing this article I am deeply indebted to Mrs. E. H. Dehan, of the University Museum. The height from the chin to the top of the central bust of the crown is 30 centimeters. The heads referred to are published by Delbrueck, *Antike Porträts*, Kaschnitz in his valuable paper on late Roman Art in *Antike II*, Schiele in *Meisterwerke der Türkischen Museen in Konstantinopel I*, and Rodenwaldt in his splendid article 76, *Berliner Winckelmanns Programm*. Consult also Riegl's *Spätromische Kunstindustrie*; Strong, *Scultura Romana*, Berliner Museum, July-August, 1923, 53 ff., and the 96, *Berliner Winckelmanns Programm*. My thanks are due also to the Direction of the Musée du Cinquenaire who kindly furnished the photograph of the head at Brussels. For the crown, see Hill in *Jahreshefte d. oesterreich. arch. Instituts II*, 1899, 245 ff., and Stegmann, *Archaeol. Anzeig.*, 1930, 2.

A LATE MINOAN PYXIS

By E. H. DOHAN

IN 1930 the Museum purchased from Paris the delicately painted pyxis of Figure 1. The buff clay of which it is made is imperfectly fired and ill-adapted to withstand the erosion and detrition to which it was subjected during the long period when it lay buried beneath the ground.

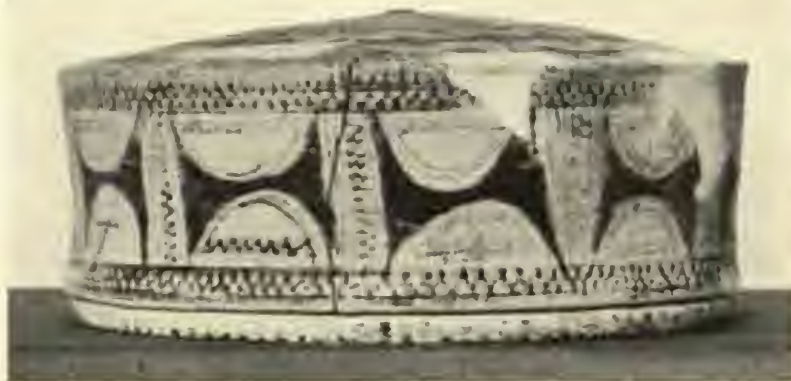


FIGURE 1. LATE MINOAN III PYXIS
DIAMETER .173 METRES

There are many breaks and several small gaps. The dark wash paint has also suffered from contact with the soil. The handle of the cover which was inserted through a neatly made central perforation is missing. Four perforations, the axes of which slant outwards, were cut through the bottom of the vase, for the insertion of feet. Mr. R. C. Bosanquet, in discussing somewhat similar pyxides from Palaikastro,¹ has suggested that the handles of the lids were 'loops of leather or buttons.' Our pyxis would look more handsome with feet and handle to match, and it is probable that both were made of some hard material like wood or bone. There is no green stain to indicate bronze.

The cover of the piece rests on a ledge at the base of the upright wall. In this respect the vase differs from the majority of contemporary pyxides, the covers of which are generally set on external ledges just

¹ *The Unpublished Objects from the Palaikastro Excavations*, p. 96.

below the rim, but earlier pyxides with covers of this type have been found at Phylakopi, Hissarlik, and the Cyclades.²

The artist spared no pains in painting this piece; the inside of both lid and vase were once covered with black wash paint; so, also, was the



FIGURE 2. LID OF LATE MINOAN III PYXIS

outer surface of the upright wall of the vase, down to the moulding on which the cover rested, which is emphasized by a row of upright lines. On the upper surface of the cover is painted a wealth of ornaments in close array. Around the central hole [Figure 2] is a ring of black which probably indicates the size of the knob; next is a zigzag running between concentric circles. This pattern, which is used many times on the vase, and lends a lace-like richness to the design, looks in some places today like rows of dots connected by zigzags, because the color of the circles which border the design is for the most part preserved only where the

² *Excavations at Phylakopi in Melos*, p. 37; *Troja und Ilion*, I, p. 271, fig. 155; *Arch. Eph.*, 1899, pl. 8, 11.

zigzag overlaps. The chief pattern on the lid is a scale pattern, painted carefully in a thin reddish-brown wash. Between other circular bands of zigzags are set rows of concentric loops facing one another, the intervening space filled with black. The shoulder of the cover is decorated with



FIGURE 3. BASE OF LATE MINOAN III PYXIS

rows of parallel lines to match the ledge on which it rests. The decoration of the upright wall of the cover [Figure 1] is bordered above by zigzags and separated into panels by perpendicular rows of the same pattern. In each panel are concentric loops facing one another, the intermediate spaces which are again painted black, resembling the double axe or butterfly pattern. On the bottom of the vase [Figure 3] are concentric circles.

The history of the pyxis reaches to a remote period of Mediterranean ceramic art. In Crete the form is found in early strata assigned to the early Minoan II period and bears traces of immediate descent from neo-

lithic art.² Outside Crete it is found in the Corinthia³ and, as we have seen, in the Cyclades and at Troy.

Pyxides of the early period are made of stone as well as of clay. The admirable lid from Mochlos, the handle of which is carved in the



FIGURE 4. STONE PYXIS FROM PSIRA



FIGURE 5. STONE LID FROM UR

form of a couchant dog,⁴ probably belongs to a pyxis and dates from the Early Minoan II period. Frequent also in this as well as in the subsequent Middle Minoan I period is a type of small stone pyxis, the height of which exceeds its diameter. The Museum possesses such a pyxis, granted by the Cretan Government from the objects found by Seager in the Psira houses [Figure 4]. These Cretan stone vases are generally held to have been made under Egyptian influence, but the wealth of stone vessels yielded by the excavations at Ur shows that in Mesopotamia as well as in Egypt the art of cutting vases from hard stone attained a high degree of excellence in the fourth and third millennium B. C., and it is noteworthy that among the stone vases from Queen Shubad's grave was found a 'circular box with a lid.' Probably the splendid stone vase, now in the University Museum, was provided with a flat lid.⁵ The smaller type of pyxis is known also in Mesopotamia. The lid of Figure 5 was found, as Dr. L. Legrain kindly informs me, in the basement of the

² *Vaulted Tombs of the Messara*, p. 93 and pl. L, no. 6900; *ibid.*, pls. XVIII, 4195 and 4196; Hall, E. H., *Excavations in Eastern Crete, Sphoungaras*, p. 47, fig. 21, C; Evans, A. J., *The Palace of Minos*, vol. I, p. 366, fig. 1886, 3.

³ Blegen, C. W., *Zygouries*, pp. 47, 78, 79, 80, 87ff.

⁴ Seager, R. B., *Excavations in Mochlos*, p. 21, fig. 5, and Evans, A. J., *op. cit.*, p. 93.

⁵ Woolley, C. L., *Antiquaries Journal*, 1928, vol. viii, No. 4, p. 444 and pl. lvii, 1.

E-nun-mah of the Ur palace. The incised circles with which it is ornamented correspond closely to those on the base of a steatite vase which was found near the lid and which bears the inscription of Naram-sin, King of Akkad in 2600 B. C.

During the period of Cretan supremacy, in the Middle Minoan III and Late Minoan I and II periods, the pyxis disappears, but at the end of the Bronze Age, it comes again into favor. The fact that a form of vase, common to Crete, the Cyclades, Corinthia and Hissarlik, not to mention Mesopotamia, disappears to reappear again at the end of the Bronze Age seems to invalidate the conclusions of A. Gotschich⁷ that northern shapes and northern types of designs are suppressed during the period of the supremacy of Cretan naturalism, but recur so soon as Cretan art begins to wane. The revival of the pyxis form at the end of the Bronze Age may have been occasioned by the wide-spread use of 'barrel pithoi.'⁸ With such vases as well as with the pyxides from Palaikastro our pyxis has much in common,⁹ both as regards the type of ornament used and the 'close style' of its application. Our vase, accordingly, is probably Cretan and belongs to the last phase of Minoan art, which is scarcely distinguishable from the early phases of proto-geometric art. The scale pattern, the concentric loops, the zigzag, are motives which recur in proto-geometric art, but the ornamentation is less closely applied than in designs of the Late Minoan III period.¹⁰

Mr. H. G. Payne in his recent study of the early Greek vases from Knossos¹¹ has assigned proto-geometric vases to the latter part of the tenth century. The beginnings of this style, however, related as they are to the last phases of Minoan and Mycenaean art, must go back much further. They cannot be far removed from the Mycenaean sherds from Tel-el-Amarna, which are dated to the second quarter of the fourteenth century B. C. On these occur a version of the scale pattern only slightly earlier than that on our pyxis.¹² Sherds from pyxides were found, furthermore, at Tel-el-Amarna. It seems safe to conclude that our pyxis was made about 1300 B. C.

⁷ *Studien zur ältesten griechischen Kunst*, pp. 34-59.

⁸ *The Unpublished Objects from the Palaikastro Excavations*, p. 94 and figs. 79 and 85 C.

⁹ Cf. also *Gournia*, pl. x, 5 and 46.

¹⁰ Hall, E. H., *Prokastro*, p. 168, fig. 102.

¹¹ *B. S. A.*, 29, pp. 224ff.

¹² Finneum, D., *Die kretische-mykenische Kulture*, p. 165, fig. 163.



FIGURE 1. LYDIAN-LACONIAN VASE. HEIGHT 243 METRES

A LYDIAN IMITATION OF A LACONIAN VASE

By E. H. DORAN

IN 1897, through the generosity of the late John Wanamaker, the Museum acquired a box of potsherds from Orvieto. To this purchase, as readers of the *Journal* will recall, the Museum owes many of its best Greek vases. Conspicuous at first sight in the mass of fragments which the purchase comprised were the pieces of the vase of Figure 1. They were sorted out many years ago with the exception of the foot and one or two small bits, but were put together last spring for the first time.

The well-baked reddish clay, of which the vase is made, is covered with a fine slip. Visible in both slip and body clay, but more abundantly in the slip, are bits of mica. The rim is broad and flat; the shoulder, high; the foot, stout, with a flaring base. The shapely body is offset from both neck and foot by plastic bands, the outer faces of which were once white. A dark brown to black and slightly lustrous paint was applied to the upper part of the neck and to the foot, but outer edges of both were reserved; the inside of the foot is unpainted; the inside of the neck has a reserved band just below the rim. Above the shoulder is painted, in the same dark medium against a creamy ground, a band of zigzags; on the shoulder, a frieze of pomegranates; above the foot, a ray pattern.

The vase stands today in a case in the Sharpe Gallery near the 'Caeretan' amphora, to which Furtwängler called the attention of the archaeological world, and which has lately been figured by Mr. T. L. Webster.¹ The two vases are in some features strikingly alike: the high shoulder, the splay foot, the wide rim. But the 'Caeretan' vase has handles. A somewhat similar shape may be seen in Clazomenian amphorae.² From these vases, however, our piece stands in marked contrast in that it is without handles. A fragmentary vase, which may, like ours, have lacked handles, was found at Samos.³ It resembles our piece

¹ *J. H. S.*, 46, p. 203, fig. 4.

² Pfuhl, *Malerei und Zeichnung der Griechen*, fig. 144; Watzinger, *Griechische Vasen in Tübingen*, pl. 2, C 8.

³ Böhlau, *Aus ionischen und italischen Nekropolen*, Taf. VIII, 12.

closely, both as regards the curve of the body and the type of foot. The closest analogies, however, are furnished by a class of small vases called variously *Kugelgefässe*, *Henkellöse Becher*, and *Krateriskoi*.³ An example of such a small vase found at Ardea is in our museum.

Rumpf held that these small vases were first made in Lydia and that, filled with precious ointments, they were widely exported. Later they were imitated in various parts of the Mediterranean—in Ionia, Italy, and Attica. Our vase, therefore, may well be called Lydian. On the other hand, a frieze of pomegranates is not in accord with the precedents of Lydian potters who eschewed floral motives. It looks Laconian. On his recent visit to the University Museum, Dr. Robert Zahn suggested a solution of the problem, namely, that the vase is a Lydian imitation of Laconian ware. That is, I take it, a Lydian potter turned a vase of native traditional shape but painted it in the Spartan manner with friezes of zigzags, pomegranates, and rays against a white ground. But not quite; though he copied Laconian motives, he laid on his design cautiously in narrow bands with plenty of undecorated surface between, like one accustomed to a meagre system of linear ornament.

In the box of Orvieto fragments were sherds of 'marbled' Lydian ware. By way of experiment and of confirmation of Dr. Zahn's theory, a chemical analysis of the clay of this ware and of the Lydian-Laconian vase was made by Dr. Kenneth Rogers, of the University of Pennsylvania laboratories, through the kind offices of Dr. Arthur K. Graham, consulting chemist of the Museum, with the following results:

| | | LYDIAN Percent | LYDIAN-LACONIAN Percent |
|--------------------------------|--------------------------------|--------------------|----------------------------|
| Silica | SiO ₂ | 60.09 | 62.00 |
| Ferric Oxide | Fe ₂ O ₃ | 6.77 | 8.22 |
| Alumina | Al ₂ O ₃ | 19.73 | 17.07 |
| Manganese Oxide (Manganous) | MnO | 0.13 | Trace |
| Nickel Oxide | NiO | 0.73 | 0.29 |
| Calcium Oxide | CaO | 6.39 | 5.53 |
| Magnesium Oxide | MgO | 0.26 | 1.95 |
| Potassium Oxide | K ₂ O | by difference 5.90 | 4.94 |
| Sodium Oxide | Na ₂ O | | |

Dr. Graham adds: "No attempt was made to detect traces of the less common elements as an ultimate analysis was not sought. The primary object, that of showing whether the two samples of pottery were made

³ Rumpf, *Athen. Mit.*, 35, pp. 163-170; Sieveking and Hackl, *Die königliche Vasensammlung zu München*, I, pl. XIX, pp. 36 and 53-54; *A. J. A.*, 18, pp. 434 and 435; von Mércklin, *Röm. Mit.*, 38, pp. 71-75 and fig. 2.

of like or unlike clay, has been accomplished. There is such a close agreement in the two analyses that the oxides of sodium and potassium were not even determined since their combined percentages would only amount to 4 or 5% in either case. Mica consists of aluminum silicate and the percentage of Al_2O_3 would therefore be partly determined by the amount of mica present in the clay. It is doubtful if the visual amount of mica present in the samples of pottery would produce a noticeable difference in the analyses. In conclusion, it may be said that since the clays are alike the pottery may well be of the same source. Absolute proof of this would require analytical data on a vast number of pieces from various sources and even then it is not certain that it could be definitely established.⁷

That Laconian vases were at hand for Lydian potters to copy is shown by the presence of a Laconian III vase in a Sardis tomb.⁸

As to the date of our vase, the prototypes of its patterns may well be those of Laconian III ware,⁹ which is dated to the first half of the sixth century B. C.

⁷ *A. J. A.*, 1921, pp. 111-114 and pl. IV.

⁸ See *Artemis Orthia*, p. 37, fig. 59 *a* for shape of ray; p. 39, figs. 60 *g* and *f* for pomegranates.

TWO VASES FROM THE HEGEMAN COLLECTION

By E. H. DODDS

IN THE Spring of 1930, Miss Annie May Hegeman of Washington very generously lent to the University Museum three vases, one of which, an Attic black-figured panel amphora, is reproduced in Figures 1 and 2. On the obverse is represented Poseidon hurling the island Nisyros at the giant Polybotes; on the reverse, a quadriga full face. The vase was purchased in Rome by Miss Hegeman's mother some thirty years ago and remained in her residence in Washington until last year. The extensive repainting which the vase had undergone was removed with the owner's kind consent.

The amphora is of the early type shown in Caskey, *Geometry of Greek Vases*, page 59, number 23. On the neck, and again on the foot are two lines of red paint; above the foot a ray pattern. Two lines of red once encircled the vase just below the panels. Above the panels are lotos and palmette friezes, irregularly drawn and embellished with both incised lines and red color. Around each panel is a fine line of black glaze which below the figures serves as a ground line. The portions once red are: on the obverse picture, Poseidon's hair, the greaves of the giants, folds of their tunics, and, on the reverse, the hair of the charioteer, the entire manes of the outside horses, a strip along the manes of the inside horses, and the charioteer's robe, unless possibly the latter was originally white. White dots in rows adorn the giants' helmets and in groups of four, their tunics. There are no traces of fauna on the island Nisyros. The shields of the giants are shown in profile; their white blazons of bulls' heads are cut in half, according to the old convention. White trefoils are suspended from the breast-bands of the horses on the reverse.

Nearly fifty years ago, Overbeck¹ listed the vases in which Poseidon appears in conflict with the giants. On the first five of the black-figured vases of his list, Poseidon appears with other deities; in the last eight, he is represented in single combat as on our vase. To this list Heinrich

¹ *Griechische Kunstmythologie*, II, Abteilung III, p. 323.

Bulle² adds one fragment. There may also be added the vase in Copenhagen³ (which belies Overbeck's statement that only on red-figured vases is the fauna of the island depicted) and an amphora in the Metropolitan Museum, New York. Number 14 of Overbeck's list is now in the Fitzwilliam Museum.⁴



FIGURE 1. BLACK-FIGURED AMPHORA. HEIGHT .462 METRES

The vase dates from about 530 B. C.

A second vase lent by Miss Hegeman is the stamnos of Figures 3 to 5. It has been extensively restored; the neck is entirely modern, including

¹ Roscher, *Lex. der Myth.*, i. i., *Poseidon*, p. 2867, fig. 5.

² *C. F.*, Cop. 3, pl. 105, 1.

³ *C. F.*, Cambridge, pl. XI, 1.

all but one or two small patches of the tongue pattern on the shoulder; missing portions of the pictures have been supplied by pieces of unpainted pottery cut to the right size, covered with fine plaster and painted; the foot is ancient but does not belong; much of the area above



FIGURE 2. BLACK-FIGURED AMPHORA. REVERSE

the foot is plaster. The curve of the lower part of the vase is, however, correctly rendered on the evidence of one original piece which extends nearly to the base. The palmette of Figure 3 is original except for the tips of the lowest petals. The antique parts of the pictures are shown in Miss Baker's drawings, Figures 4 and 5.

On both obverse and reverse are painted scenes of farewell; on the

one a warrior leaving his young wife and father to go to war; on the other a man taking his farewell of two women, as he starts on a journey. For the departure of the young hero a libation has been poured. He stands, phiale in hand; his full panoply of war adding splendor to the



FIGURE 3. RED-FIGURED STAMNOS, HEIGHT .397 METRES

simple scene. His accoutrement includes spear, sword, corslet, shield, helmet and greaves but, as often in scenes of farewell, the corslet is unfastened and the helmet is in his hand. The girl on the left, a statuesque figure, extends her left hand toward her husband; in her right she holds the oinochoe from which the libation has been poured. Between the warrior and his young wife is written retrograde (OVA)



FIGURE 1. DETAIL, RED-FIGURED STAMNOS, CHIOISIA



FIGURE 5. DETAIL, REPOSED POSITION, REVERSE

That the third figure of the scene was a man is shown by the portions of the staff which crosses the warrior's shield. Traces of alterations of the preliminary sketch, done in dilute color may be seen near the warrior's knees. The artist first planned to draw the legs of his figure straight with the tops of the greaves higher and close to the thighs.



FIGURE 6. RED-FIGURED STAMNOS
ROYAL SCOTTISH MUSEUM, EDINBURGH

On the reverse [Figure 5] the figure of a girl is preserved, except for the crown of her head; she extends her hand toward a central bearded figure facing her. Of the figure of the second girl, on the left, only head and lower portions of drapery remain.

The style of our artist may be deduced from this vase, fragmentary as it is. His figures are tall and imposing but impassive. His men and women look alike and, unless the men are armed, are dressed alike in

Ionic chitons with voluminous folds and billowing sleeves and over them himations, which fall in impressive lines, nearly alike in all his figures. He has a penchant for women's beaddresses, for the ways in which locks of hair fall and for the various methods in which kerchiefs are tied. The necks of his figures are uncommonly large. Hands are expression-



FIGURE 1. DETAIL, EDINBURGH STAMNOS

less, square when opened, fat when closed. The beard of the warrior on the obverse is full but suspended, as it were, by a narrow band on the cheeks, so that it looks like a false beard.

The artist is easy to identify; he is the painter of the pointed amphora in Munich on which is pictured the rape of Oreithyia by Boreas, and of its replica in Berlin. Mr. Beazley named this artist the Oreithyia painter and in his *Attische Vasenmaler*⁵ attributed six vases to his hand. In his *Vases in Poland*⁶ he added three more,⁷ but one, the Louvre pelike, was

⁵ pp. 292-3.

⁶ p. 19.

⁷ *J. H. S.*, 50, p. 161. Mr. Beazley writes that the 'I think' may now be omitted.

subsequently withdrawn. The style of the Oreithyia painter will be recognized in our vase if the young wife on the obverse picture is compared with the figure of Deianeira on the London Hydria;² or if the head and hand of the girl on the reverse of our vase is compared with



FIGURE 8. DETAIL, EDINBURGH STAMNOS

those of the girl on the right in the obverse picture of the Berlin amphora. The beard of the man on the reverse of the Munich amphora closely resembles that of our warrior. The same retrograde inscription as is found on our vase occurs between figures on the London Hydria.

Mr. Beazley has kindly confirmed this attribution and has pointed out that the obverse of our vase is a free replica of the reverse of the stamnos in Edinburgh, which is number four in his list. I am indebted to Mr. Alexander O'Curle, Director of the Royal Scottish Museum, for permission to publish this vase and to Mrs. Beazley for the privilege of reproducing her excellent photographs of it [Figures 6 to 9].

The Edinburgh vase is less a stock piece than the Hegeman stamnos.

² *Mon. Line.*, IX, p. 22, fig. 1.

In the obverse picture a youth lays hands on a woman. He wears a chlamys and petasos and is therefore a traveller, and he comes armed. The woman moves to the right to escape him. This central pair is flanked by two onlookers, a girl at the left who stretches out her hand in protest



FIGURE 9. DETAIL, EDINBURGH STAMNOS

of the action of the youth, an older man on the right who stands quietly by.

It is perhaps wiser not to try to name the figures in the scene, but it may be pointed out that the picture might be considered a milder version of that on the obverse of a stamnos, E446, in the British Museum, by the painter of the Yale Oinochoe¹⁵ which has been held, but hardly proved, to represent Orestes' murder of his mother. Two other vases painted by the same artist,¹⁶ a contemporary of the Oreithyia painter, represent again an armed man threatening a woman. An unarmed man seizing a woman who might therefore better be Hermione than Clytaemnestra is

¹⁵ *C. F.*, Br. Mus. 3, iv, pl. 22, 1.

¹⁶ *C. F.*, U. S. A., pl. 132, and *A. J. A.*, 1924, p. 225; and *C. F.*, Belgique, pl. 341 a.

painted by the Deepdene painter on a stamnos in the Louvre.¹¹ In the decade after Salamis some ten years before Aeschylus' great trilogy was produced, when works of art both major and minor were representing the great themes of the Oresteia,¹² it is tempting to believe that such pictures represented the personages of these tales. The connection of the Boreas and Oreithyia vases with the stage has already been pointed out.¹³

It is, however, the reverse picture of the Edinburgh vase [Figure 6] which chiefly concerns us. The scene corresponds closely with the obverse picture [Figure 5] of our vase, with only such minor variations (the departing hero is beardless and carries no sword) as show that the one is not a slavish copy of the other. Two repetitions of pictures in a total list of eight vases—to omit the Tübingen fragment—imply that our artist was given to producing variants of his favorite themes.¹⁴

¹¹ *C. V.*, France, 96, 3.

¹² Cf. *F. & R.*, II, pp. 77 and 78, figs. 41 and 42. See also Séchan, *Études sur la tragédie grecque*, pp. 86 and 87.

¹³ *F. & R.*, Text II, p. 189.

¹⁴ On the subject of variants and replicas, see von Mercklin in *Röm. Mitt.*, 38, pp. 105-106, footnote 2.



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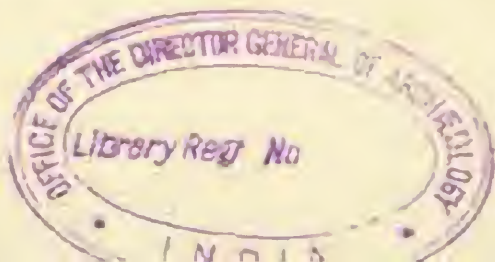
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PRIMITIVE PEOPLES OF MATTO GROSSO BRAZIL

V. M. PETRULLO

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Tsuya Gini.

PRIMITIVE PEOPLES OF MATTO GROSSO

An Account of Archaeological and Ethnological Field Work at the Headwaters of the Paraguay and Xingu Rivers in Matto Grosso, Brazil, During 1931

By VINCENT M. PETRICELLI

THIS account of my field work in Matto Grosso, Brazil, during 1931, is offered to those interested in primitive peoples and especially in South American archaeology and ethnology, with the sole motive of making available source material. The paper is not intended as a critical study of the region with which it deals nor does it purport to be thorough in its treatment of the subjects that it discusses. To my critical readers I plead the fact that I was a novice in the South American field at the time that the material presented was gathered, and that I was among tribes that are either but slightly known or not at all, and that thus my difficulties were those to be met by the first workers. One handicap was lack of interpreters, limiting the field of my investigations to what was physically observable. However, it is intended that the paper give the fundamental setting of the cultures with which I came in contact for any analytical study that may be undertaken in the future.

The work was done under the auspices of the University Museum cooperating with the Matto Grosso Expedition and the Academy of Natural Sciences, whose representative was Mr. James A. G. Rehn.

Both archaeology and ethnology occupied my attention, my project being fundamentally in the nature of a survey of the possibilities that the country offers in both fields of research and to study the field conditions, rather than to bring back a conclusive and thorough study of some particular site or tribe. Though the unlooked-for acquisition of an amphibian airplane by the expedition aroused the hope that a prolonged stay with some tribe could be made, since the usual excessive amount of time spent in reaching the desired village could be saved by flying the distance in a few hours, the ultimate results were what had been originally planned for reasons that will appear in the narrative.

Briefly, my work included the locating of a number of archaeological sites and the partial excavation of two of them; visits to the Bororo da

Campanha, or Western Bororo, and the Eastern Bororo of the São Lorenzo river valley; and a trip to the headwaters of the Xingu river, which resulted in meeting with the following tribes of the Kuluseu-Kuluene region: Bakairi, Anahukua, Mehinaku, Aura, known also as the Vaura, Trumai, Yawalapiti, Kamayula or Kamayura, Tsuva, Kuikutl or Cuiçuru, Kalapalu, and Naravute. Of these the Tsuva have never before been reported, and the Kalapalu, Kuikutl, and Naravute have not been described, though visited for the first time in 1920 by Major Ramiro Noronha while engaged in surveying the Kuluene river. The others are either described or mentioned by Karl von den Steinen and Max Schmidt.

So many stories have been told by travelers in little-known countries of the discovery and the collecting of remarkable material which was subsequently lost to science through some adventurous happening, that I hesitate to add another to these sagas of exploration. Nevertheless, as a matter of history, mention must be made that on the descent of the Kuluseu river we met with an accident under remarkably prosaic conditions which resulted in the loss of my Bakairi and Anahukua notes and collections, and the more serious loss of a great deal of equipment, which forced a more hasty itinerary and did not permit me to bring back any anthropometric data nor to carry out the work in racial blood grouping that had been projected. Modern equipment in the form of an airplane saved the trip from being entirely fruitless. By bringing fresh supplies of food and ammunition, it made possible the reorganization and continuation of the work, though the stay in the region was not as long as had been intended.

The projects of the Matto Grosso Expedition were many, and it is with regret that I cannot include a discussion of them in the present report. However, it is with pleasure that I take the opportunity of acknowledging my indebtedness to my companions on the expedition, with whom I shared so many pleasant and unpleasant experiences, and other things that fall to the lot of those traveling in little-known territory. Especially do my thanks go to those who were concerned with my work more intimately, and at times shared in bringing it to a successful end: to Mr. E. B. Fenimore Johnson; to Mr. Arthur P. Rossi, who is responsible for what photographic records we have of the Xingu region; to Messrs. Floyd Crosby and Ainslee Davis for photographic and sound recording; to Mr. Charles Lorber, the pilot of the amphibian plane, and

to Messrs. Joseph Saucedo and John Due, co-pilot and radio operator respectively; to Mr. John S. Clarke, Jr; to my Brazilian 'camaradas' and Bakairi canoe-men, who followed me so courageously into a region that is not devoid of danger, and to whom a large share of the credit for the success of the venture is due; and to Mr. Giacomo Anzil.

To others not so intimately connected with my field work I am no less obligated. To Mr. Eldridge R. Johnson for his generosity in placing at my disposal the amphibian plane, without which my survey would not have been carried out over such a vast region, and which was instrumental in averting a tragic end to the Xingu venture; to General Candido Mariano da Silva Rondon, who so courteously granted the expedition permission to enter the Indian country, favoring us with his personal interest and friendship and with countless kindnesses; to Major Ramiro Noronha for the infinite pains that he took to give us all the information at his disposal concerning the region that only he knows so well, and for his intimate interest in our welfare; to Dr. Benedicto Duarte Monteiro and Dr. Alvaro Duarte Monteiro of the *Inspeccão de Protecção aos Índios*.

I further wish to thank the following institutions and individuals that in some way or other helped me in my task: Dr. Jules Freund of the Henry Phipps Institute; Dr. Max Schmidt for his advice and mapping out for me many projects; Dr. E. Roquette-Pinto, the director of the *Museu Nacional*, and Dr. Heloise Alberto Torres, of the same institution; Dr. A. Amaral and the *Instituto Butantan* for numerous courtesies and supplying Dick test material; the *Inspeccão de Protecção aos Índios*; Mr. John Gordon Ramsey for his hospitality and permission to excavate at Descavaldos; Miss Eleanor M. Moore for making the six plates of drawings; Miss M. Louise Baker for drawing the map.

* * * *

Dr. E. Roquette-Pinto has expressed the opinion that to-day the most interesting groups of mankind are those to be found in the northern forests of Matto Grosso. Investigating the section of the state which he has called Rondonia, he found numerous tribes with a simple stone-age culture apparently unaffected by what has been happening on the continent of South America since the first arrival of European adventurers. Geographical barriers, and the fact that the surrounding peoples have

borne the brunt of European aggression have been instrumental in preserving for the anthropologist, cultures that are simple and archaic, and unquestionably of South American fostering.

* * * *

Matto Grosso was first entered, by way of the Paraguay river, in the latter part of the sixteenth century by Spaniards. Soon afterwards the Portuguese came from the east, succeeding in traversing the southern portion and even reaching the Andes, the sharing of the wealth of Peru being their goal. In the early eighteenth century, towns were founded on the banks of the Cuyahá and the Paraguay rivers. Following the establishing of these settlements, the southern portion of the state underwent gradual exploration, and its aboriginal peoples inevitable subjugation.

The nineteenth century produced a number of scientific expeditions which descended various southern affluents of the Amazon that have their origin in the highlands of Matto Grosso, but generally the north resisted penetration, so that at the beginning of the twentieth century it still remained largely unknown.

A number of reasons can be found for this. Unquestionably its isolation from the rest of Brazil, being surrounded by geographic barriers that permit entry only from the south, has contributed to its slow settlement. In fact, for the settlers it has held little attraction, until recent times. In earlier times, the desire to reach Peru, or to discover a water-course linking the Amazon with the Paraguay, or to search for fabled gold mines, led to the penetration of the country.

The second dream drew many expeditions. For many years the hope was entertained—it still is entertained by some adventurers—that shipping could pass from the Amazonian waters to the Paraguayan, under the belief that Brazil was an island. In fact, the theory was not founded without being based on reasonable suppositions. At places the waters of the Amazon system almost meet the waters of the Paraguay, being separated only by a few miles, but the dream of free navigation beyond the headwaters of the Paraguay has never been realized. All of the vast rivers that flow northward to join the Amazon are broken by numerous falls, rapids and cataracts, making navigation impossible except with small canoes. Inspired by commercial projects as these early explora-

tions were, there was loss of interest in the interior of Matto Grosso when the above fact was ascertained.

Thus a large portion of the vast territory has remained a great hinterland, still little known and as difficult to penetrate as ever. In the popular literature it is often referred to as the land of lost civilizations, golden cities, fabulous gold mines, diamonds, death, hardships, terrible dangers, and unconquerable aborigines. In short, it is still largely the land of fable rather than a land of reality.

For opening the country, more than to any one else the scientific world is indebted to General Candido Mariano Rondon, who has devoted almost his entire lifetime to exploring the country and pacifying and protecting the Indians. He has led one expedition after another into the interior at great personal sacrifice. He has succeeded in instilling the same enthusiasm that characterizes him, in his assistants, to whom with characteristic modesty he attributes the success with which the expeditions have met. Without any practical laurels to reap, there has been sacrifice of health, and sometimes of life, in doing the country a service not always appreciated nor understood. The humane motive that inspired General Rondon and his subordinates to stop the inconsiderate treatment of the aborigines and to convert them into useful, productive citizens of Brazil, was too idealistic to meet always with the approval of the politicians. However, General Rondon has been successful even in overcoming this obstacle. So successful has he been in his contact with the aborigines that these same people, who a few years ago attacked his parties, have assisted him in building roads, and in putting up telegraph lines. Instead of being harassed by adventurers, these people are protected, taught and encouraged to develop their mode of existence as suits them best.

Matto Grosso is too vast a country even for such an exceptionally indefatigable worker as General Rondon to cover. A great deal of the work has been done by subordinates often leading expeditions into new and difficult territory. Major Ramiro Noronha, geographer, ethnographer and humanitarian, has been the leader of expeditions in the northeastern portion of the state and the only one who has visited many tribes on the tributaries of the Xingu river. Yet the *Inspectoria de Protecção aos Indios*, of which General Rondon was the chief, and Major Noronha, the leader in charge of the Matto Grosso district, has not com-

pleted its work. There still are many regions to be explored, and many tribes to be pacified.

* * * *

Straddling as it does the Amazonian and Paraguayan drainage systems, *Matto Grosso* does not form a geographic unit, but is divisible topographically into three sections, each differing from the others in important geographic features. The south, drained by the Paraguay system, is low flat country subject to yearly floods which convert it into a veritable lake dotted with a few islands to which animal and human life retreats. At the height of the dry season this same plain becomes so arid that habitation is limited to the borders of the larger streams or the larger water holes. For the most part it is open grass country, with islands of jungle and palm groves to which the wild life withdraws during the day. Bordering the streams is found the thick and almost impenetrable jungle, presenting two solid walls of green vegetation transformed in season to walls of flowers. In this country, bird life is rich and varied; mammalian life is plentiful and attains unusual size, especially in the cat family, one member of which, the jaguar, attains the size of a female Bengal tiger; tapir, capivara, deer, peccary, and otter abound, as well as various species of reptiles which crowd the banks of the rivers during the dry season; fish of many kinds, including the notorious piranha, crowd the rivers. [Plates II, 2; III, 1; IV, 1.]

The central plateau area, the *chapadão*, is in direct contrast with the southern portion, the pantanal. It rises abruptly from the pantanal to some twenty-five hundred feet in a series of steps [Plate IV, 1]. It is an undulating, open, sandstone table-land, cut into segments by numerous jungle-bordered streams that are the fountains of the Paraguay and southern affluents of the Amazon. Flat-topped escarpments, constantly being undermined by the streams, break the monotony of the vast open expanse. These sandy and open wind-swept moorlands are covered with grasses, shrubs and dwarf palms. Though many species of plants may be found, there is no luxuriant vegetation. Likewise, animal life, though it may be varied enough, is not abundant.

Where the Amazonian waters begin to assume the proportions of rivers, the Amazonian forest belt begins. Conditions in certain features approximate those of the pantanal. Bird life is richer than in the



FIGURE 1. THE PORT OF COIMBRA



FIGURE 2. THE PARAGUAY RIVER AT DESCALVADOS

chapadão, as is also mammalian and floral life. The rivers are likewise well stocked with fish, and as the pantanal originally was comparatively thickly settled, so is this part of Matto Grosso. The quantities of fish seem to determine the density of the population. Indian villages are found along the rivers quite closely together. It is this section of Matto Grosso that is poorly and in some parts totally unknown.

Most of the southern part of the state is given over to civilized pursuits. The aboriginal peoples have practically disappeared, either having become exterminated or absorbed by the newcomers. From the time of the arrival of the earliest exploring parties, diamonds, gold and rubber have attracted the European adventurer, but now the main activity is cattle raising, though the search for diamonds still continues, especially at the headwaters of the Paraguay and the Araguaya rivers. A number of modern towns thrive along the railroad line, which runs from Porto Esperança on the Paraguay river, eastward. The most important cities are Cuiabá, the capital of the state, and Corumbá, the terminus of the shipping lines from Montevideo and Buenos Aires. S. Luis de Cáceres is a typical frontier town, conservatively maintaining an atmosphere of the old colonial days. [Plate II, 1.]

Only the Eastern Bororo, on the São Lorengo, have survived the incursions of the white man. Pacified but a few years ago, they have been collected on reservations, where they still maintain their own culture. Pirigara, Corrego Grande and Rondonópolis, all on the São Lorengo river, are comparatively large settlements.

The Bororo da Campanha have almost disappeared, and there exist but a few families of the semi-nomadic Gnató. These are not of pure blood, having mixed with negroes and whites, and have practically forgotten their original culture. On the Taquary, a few Terenos have been collected in a settlement.

At Barra dos Bugres a few Barbados remain. Their pacification has been completed and they are making rapid progress under the tutelage of the Inspectoria.

Further north the Paressi and some Nhamibikuaras live in settlements along the telegraph line. The Paressi have shown great adaptability for Brazilian culture.

The Inspectoria maintains other posts, in various parts of the country, but at places like Pedro Dantes it has not succeeded in establishing permanent settlements. [See map, Plate XXV.]



FIGURE 2. THE JAGUAR DANCE OF THE RINCHO DE CAMPANIA



FIGURE 4. BACK VIEW OF THE JAGUAR COSTUME



FIGURE 1. AN VIEW OF THE FLOODED PANTANAL



FIGURE 3. THE INCENSERATION OF THE JAGUAR

Descavaldos, a cattle ranch situated about two hundred and fifty miles north of Corumbá, on the west bank of the Paraguay river, was chosen by the Matto Grosso expedition as its headquarters. It offered advantages of possessing abundant animal life, the study of which was one of the projects of the expedition, of comparatively good communication with the outside world, and localities rich in archaeology. Unfortunately the aborigines have practically disappeared from the region. A few Guató families still hunt in the marshes to the south, and a Bororo da Campanha village is within a day's ride of the port of the ranch, but its acculturation has gone so far that there is little left for the ethnologist. A few Chiquitos from time to time came from Bolivia, generally with rubber, over the road which probably has been taken by many migrating tribal groups, moving eastward or westward, for Descavaldos is the end of the natural road leading from the Andean Highlands. For this reason archaeological excavation there is of special interest.

Though a narrow-gauge railroad connects Rio de Janeiro with Porto Esperança on the Paraguay river in the southernmost portion of Matto Grosso, the more convenient way of entering the country for an expedition burdened with tons of baggage is by the Paraguay river. On reaching Montevideo from New York, the baggage can be transferred to a large and surprisingly comfortable river boat, and in two weeks Corumbá is reached. For this part of the journey the traveler would do well to equip himself with a hammock and mosquito net of fine mesh.

To the naturalist, the territory flanking the Paraguay river still offers interesting material, but to the ethnologist, unless he leaves the boat and penetrates to the interior, especially to the west, there is little. The original inhabitants of the territory have given way to the Argentinian, Paraguayan, Bolivian, Brazilian and even the American. The country has been turned to the raising of cattle, or to various manufacturing projects. The world war hastened the process of transformation. With the need of meat in Europe, the country saw boom times, relics of which are deserted pretentious-looking buildings and equipment. However, small groups of aborigines can still be met at the ranches or the factories.

Whether met in groups or singly, the aborigines that are close to the ranches, towns or factories, show the usual effects of acculturation, which very often results in reducing culture to almost nothing. For example, at Puerto Pinasco were found a band of Angaité, presumably employed

to round up cattle for the factory. In the brief time spent with them, no vestige of their own original culture could be discovered. Living in abject poverty under wall-less shelters made of strips of corrugated iron, bits of cloth, and grass, wearing filthy clothing which was hastily donned on our approach, they seemed to have retained nothing but their language. Some Chamacoco and Lengua that were met presented the same degeneration. However, it is said that when they withdraw to the interior, which is done seasonally, they revert to their own ways.

Corumbá, which was reached in the middle of February, is a modern, comparatively busy port depending on commerce for its existence. The large boats from Buenos Aires or Montevideo leave their merchandise at Corumbá, where it is loaded on smaller wood-burning steamers, to be taken to S. Luis de Careres or to Cuyabá. It is also the real terminus of the railroad line running to the coast from Porto Esperança. [Plate II, 1.]

An air line has for some years been established between Corumbá and Cuyabá, reducing a journey of several weeks to a few hours.

While the expedition proceeded to Descalvados in a small boat and three barges, I flew to Cuyabá, in order to present my credentials to the government and to arrange with the *Inspeccia de Protecção aos Indios* matters pertaining to my field work. The absence of Major Ramiro Noronha from Cuyabá did not make possible the achievement of my motive. However, since General Rondon, who had received me in Rio de Janeiro, had been good enough to send a telegram presenting me to the authorities at Cuyabá, the records of the *Inspeccia* were placed at my disposal. The presence of Professor Max Schmidt of Berlin at Cuyabá was a fortunate occurrence. So little is known about the interior of Matto Grosso that the opportunity of conversing with Professor Schmidt and of the *Inspeccia* field men was indeed a fortunate one. Later, on my meeting Major Ramiro Noronha, and on the reception of a telegram from General Rondon giving the desired permission to enter the Indian territory, Major Noronha, whom I found in Cuyabá on other visits, placed at my disposal and at the disposal of the expedition personal knowledge, especially of a geographical nature, which proved invaluable.

Perhaps a word ought to be said concerning the attitude of the *Inspeccia* in respect to foreign expeditions. On arrival at Cuyabá I discovered that it was forbidden to visit any of the aboriginal tribes



FIGURE 1. AIR VIEW OF THE UPPER PARAGUAYAN VALLEY



FIGURE 2. SÃO LORENÇO, BORORO SHOOTING FISH

without special permission from the government. It developed that in recent years a number of foreign expeditions, under the guise of having scientific and humanitarian purposes, well supplied with credentials from pretentious scientific societies, membership in which can be had simply by subscribing to some publication, and often with political recommendations, have applied for entrance to the interior of Brazil. They have been received courteously and often every facility at the disposal of the government has been theirs. Subsequently have appeared sensational articles describing the terrible hardships encountered, and the scientific results have never been made public other than from the popular lecture platform, or have been published in some kind of adventure book. In many cases both the Brazilians and the aborigines have been maligned, and hardly ever is it mentioned that the Brazilian government did all in its power to help the expedition. This modern 'exploration racket' has justly aroused the ire especially of the *Inspeccão de Protecção aos Indios*, and the attempt is made to keep all foreigners out of the Indian country, unless it is proved without a doubt that the purpose is scientific. An expedition of the above kind which sensationally visited the country a few years ago was well remembered at Cuyabá, and its antics unquestionably caused us much delay. However, when the *Inspeccoria* was convinced of our sincerity, it cooperated with great courtesy and sympathy.

ARCHAEOLOGICAL EXCAVATIONS AT DESCALVALDOS

Early in April, I returned to Descalvaldos, and immediately began excavating the first archaeological site on the west bank of the Paraguay river. The water was so high at this time that traveling overland was impossible. Descalvaldos was literally an island, and the project of sampling numerous archaeological sites further inland, the location of which I had learned from the natives, had to be abandoned. Intermittent heavy rains threatened to destroy what was uncovered, and the untrained workmen made progress slow at first.

As soon as the water subsided somewhat, another site was opened some five miles away to the north of the first. This site was covered with jungle which had to be cleared. In the place of rains, we had to contend with peccarys and wild cattle. The site differed strikingly from the first in the types of burials.

With the exception of the hills of Dourados, the country between Corumbá and S. Luis de Cáceres is pantanal, with here and there a hill or range of hills rising abruptly from the level lowlands. Between Dourados and the Jauru river, the Bolivian border and the Paraguay river, is the vast ranch of Descavallos, which is larger than Belgium in area, with many thousands of cattle roaming its meadows and an insignificant number of people to testify to its existence as a reclaimed land. Wild life is more abundant than the cattle, demonstrating its great tenacity in comparison to human life. Its original human inhabitants have gone, and new ones, Brazilian, Paraguayan, Bolivian, German and American, have taken their place. A mere handful of Bororo, who are so only in name, remain where there were once thousands.

But the ranch is rich in archaeology. Its aboriginal population planted in the ground some phases of its culture which have withstood the action of water and other destructive elements. There are numerous localities where the archaeologist can recover some of the products of the arts of the now-extinct tribes. The newcomers to the land have not left these undisturbed. In the making of caña and in keeping it afterwards the large funeral urns that can be so easily gotten from the ground have been found to be excellent receptacles. In the making of new pottery, it has been discovered that the clay of the old mixed with the fresh preparation, gives it a better temper. The result of these two useful discoveries has been the ruthless excavation of a number of sites in a most destructive way. Fortunately the area is a vast one and the population very sparse, and archaeology is to be found everywhere, so that the scientist can still tap fresh and undisturbed sources.

It has been known that urn fields are plentiful in the region, and Max Schmidt also discovered petroglyphs in the hills of the Morro do Triunfo near the Ilha de Caracaras. The natives also report the presence of mounds or tumuli, from one of which at Agua Verde, located on the Descavallos ranch, the specimen shown in Plate XIX, 3 is supposed to have come, according to the lessee of the territory. It had been planned to visit the Morro do Triunfo and the hills of Dourados to search for petroglyphs, and also to excavate one of these mounds. Climatic conditions interfered, causing the abandonment of these projects; for when the waters were high it was impossible to reach the desired localities, and when they had withdrawn, ethnology was occupying my attention.



FIGURE 1. São Lorenzo Bororo with Fish He Shot



FIGURE 2. São Lorenzo Bororo Drawing the Bow

As has been mentioned, in the early months of the year the expedition was practically marooned on what was virtually an island, the port of Descavallos, where most of the ranch buildings are located. At one time it was a prosperous and thriving settlement, having in addition to the buildings for the officials of the company that owned the ranch, a number of rows of houses for the ranch hands and their families, a factory, warehouses, power plant, hospital, church, and school house. Today the empty, crumbling buildings and rusting machinery attest to its past grandeur. Where hundreds led a busy and gay life, only a few score have remained.

CEMETERY I

(Plates VIII, 1; IX, 1, 2)

The settlement was built on an extensive aboriginal cemetery, whose limits have not been established as yet. For many years archaeological material has been brought to the surface by workmen, but no systematic excavating has been done, though the site was tested by Max Schmidt. While digging a fence ditch, members of the expedition came upon some interesting material, and work was stopped awaiting my arrival, and after that event the withdrawal of the waters, before continuing further.

This section, which was subsequently excavated, is between a row of houses and the waters of a lagoon that sweeps in from the Paraguay proper. At the commencement of the work early in April, it was no more than twenty meters from the water's edge. The buildings, fences, and a large tree that we were not permitted to remove, interfered with extending the excavation in desired directions, after the work was gotten under way. When work was stopped two trenches perpendicular to each other had been made covering twenty-two square metres of ground, at an average depth of one and one-half metres.

For the work, men were drawn from those on the ranch, men accustomed more to the saddle and work in connection with cattle, rather than such a careful and meticulous occupation. However, after it became settled in their minds that the objects uncovered were of importance and interest to me, they made excellent helpers.

Surface Finds

Over the entire area on which the buildings are built, potsherds are found in great quantities, but other artefacts are rare. The withdrawal

of the water after the flood season often exposes objects, and several interesting pieces were found on the very edge of the bed of the Paraguay, indicating probably that the river has shifted its course since the time that the land was held by the aborigines, a not uncommon thing for the rivers of Matto Grosso to do. One such piece is a broken, polished, thin celt of limy chert. It is two centimetres in thickness, eight centimetres in width, and ten in length [Plate XIX, 1].

Most of the potsherds are of no value, since they show no decoration and no technique different from that of the pottery that is to be found below the surface. Several pieces show impressed string pattern decoration.

A grooved, heavy, polished celt was found on the surface of the section excavated. It is shown in Plate XIX, 2. It is badly and unevenly made of quartzite of coarse texture.

A polished, grooved, round fragment, measuring five centimetres in diameter and eight centimetres in length, may have been the upper part of a pestle. Another piece may have been used as a hammer stone.

At all levels between thirty centimetres below the surface and the floor of the excavation which was the top of the hard pan, were found burials, most of which were badly preserved. The action of water, and roots of the tree, and probable disturbance during the construction of the buildings, had broken many of the pots and damaged the skeletal material.

The hard pan was struck at an average depth of one and one-half metres. At several places, with much labor, it was excavated to a depth of ten and fifteen centimetres, but this brought forth nothing. Lack of time stopped further investigation in this direction.

No evidence of any geological stratification appeared on the walls of the trenches, so that the dating of the site is impossible by this means, except to say that it is of a recent date.

The site yielded abundant pottery, shell and teeth ornaments, but very little skeletal material could be preserved with the materials that we had. However, several skull caps, one skull minus the lower mandible, and a skeleton minus the head have been brought out but have not been studied by a competent person as yet.



FIGURE 1. SÃO LOURENÇO BORORO WITH FACIAL PAINTING



FIGURE 2. SÃO LOURENÇO BORORO CUI.

Scattered everywhere, and sometimes definitely associated with the burials, were found a large quantity of aquatic shells [*Pomacea australis* (Orbigny)].

So close together were some of the burials that in some cases they overlapped. Though not enough burials were uncovered to determine this without further question, from what was found, there is indicated that the burials were grouped. In order to make the description easier to follow, the term 'unit' has been adopted, referring to a find that is considered to be separated from the others, though it may originally have consisted of more than one burial.

Unit A

At a depth of thirty centimetres there was uncovered an inverted yellow pottery bowl, but slightly damaged, measuring about thirty centimetres in diameter and ten in depth. There are marks on the surface which indicate that it was made by the coiling technique. On the whole it is poorly made, and bears no decoration of any kind.

Underneath it were found a number of small, fragile mussel shell beads and perforated monkey teeth. No bone fragments of any species were associated with this unit. However, the presence of the teeth and beads is good evidence that originally a skeleton had lain under the bowl. In all probability it was that of a very young child, the fragility of the bony material accounting for its disappearance under the climatic conditions.

Unit B

This unit was located at a slightly lower level than A, and about a metre away from it. It consisted of an inverted pottery bowl, slightly smaller than the bowl in A, of red ware, in excellent condition. On its removal it was discovered that it had been covering another bowl of elliptical shape which rested on a skull. It was found that this second piece fitted the top of the skull exactly, so that it must be concluded that it was made for that purpose. The skull rested on its base, facing the southeast. It was that of a young person, and its bones were poorly preserved. In spite of all the care that was taken, most of it crumbled when the attempt was made to remove it.

At the base of the skull and close to it were several shells, and also perforated teeth, a few long, cylindrical jasper beads, and the fragile

mussel shell beads that were found with A. In addition there were a few long bones of some bird or mammal, which because of their fragility could neither be taken out nor identified.

Unit C

A badly preserved skull, at a slightly lower level than B, and at a distance from it of one and one-half metres. It was not protected by any pottery, and no artefacts were found associated with it. It was the skull of an adult.

Unit D

About a half metre away from C appeared an inverted bowl of approximately the same size, shape, and workmanship of A. Under it were some unidentifiable fragments of bone and some mussel shell beads. Being on the same level as C, this unit may very well have been a part of the C burial, shifted and separated from it subsequent to the interment, by the action of the water and other disturbing elements.

Unit E

At a depth of half a metre and about two metres away from D was uncovered the skeleton of a child, unprotected by any pottery. The child had been placed on its back, the knees drawn up to the chest, the lower leg doubled on the femur. The greater portion of the skull had disintegrated, but a few teeth remained. All of the bones were badly damaged and could not be preserved. No grave furniture of any kind was found in association.

Unit F [Plate IX, 2]

Work stopped from progressing in the direction taken by D and E, by the foundations of a wall, the trench was extended in the other direction from A and later swung to the right so as to be at right angles to the original trench. In this new section were uncovered a number of overlapping burials, which, though badly preserved, nevertheless added considerably to the material.



FIGURE 1. São Lourenço Boninho Goul



FIGURE 2. São Lourenço Boninho with a Flower Lanyard

About two metres away from A were a group of overlapping burials in the same level. After clearing away the debris, burial F was isolated and was found to be in a fair state of preservation.

This unit was first revealed as three inserted bowls, all badly broken. On their removal a skeleton of a young person was uncovered, lying on its back, its head slightly turned to its right, its knees drawn up and outward, and its feet together, thus forming with the legs a diamond-shaped figure. It was orientated northwest to southeast, with its head to the northwest.

Extended at its right side, with the fragments of the skull partly resting on it above the pelvis, was the fragmentary skeleton of some small mammal, probably a monkey, also carefully covered with a pottery bowl.

The skeleton, besides occupying such an odd position, showed other peculiarities. The head was large, and judging from the formation of the teeth it must have been an individual past puberty. The bones of the legs, in contrast, were puny, being both thin and short. Around its neck and chest, still in position, perforated teeth were found, in such a quantity that the bones were entirely hidden by them. On their removal a still greater quantity of small perforated shell discs, in position so as to make any other inference than that they formed a necklace impossible, were about the neck and extended partly down the neck. A good number of the same cylindrical jasper beads were scattered among the perforated teeth and the perforated discs.

The small skeleton of the mammal likewise was adorned with a necklace of the same cylindrical jasper beads.

Several aquatic shells were found associated with the burial.

No other artefacts of any kind could be found.

Most of this skeletal material has been preserved.

Unit G

Close to the left of the head of F, a number of burials must have existed, but we found only debris consisting of potsherds, beads, perforated teeth and bone fragments. One small pot was preserved whole, but it was found to be empty. It may have belonged to unit F originally. It is a small, globular pot with a broad rim decorated with impressed

string patterns, similar to the decoration found on the surface potsherds already described.

Unit H

This was located about one and one-half metres away from G, and at the same level. It consisted of a well-preserved adult skeleton of large proportions, lying on its right side, the knees drawn up to a sitting posture, the lower legs flexed on the thighs. The skull could not be located. No pottery or any kind of ornaments were associated with it; but it did present a new feature in that at its back was found a cache of piranha jaws and teeth. The body lay in an east to west line.

Unit I

A number of burials were uncovered about a metre away from H and to its right. They conformed to the general type. Four pottery bowls, badly damaged, covered skeletons, one of which occupied an extended position on its back. The other skeletons were so damaged and so mixed that little information could be gotten. There was total absence of any ornaments, but the shells described above were also associated with this group. The bone material was that of children.

In addition to the above finds there were recovered from accidental excavations nearby a skull minus the lower mandible and a skull cap. They have not been studied as yet.

* * * *

Lacking any geological data on which to base an estimate of its antiquity, it is significant that no artefacts of European origin were found in the excavation.

Though most of the skeletal remains were those of children, it cannot be inferred that the site is a child cemetery, when it is remembered that infant mortality is especially high among primitive peoples.

The method of burial for children seems to have been a simple interment protected by pottery. Ornaments such as the children wore were placed with the bodies.

Of these ornaments, the perforated shell discs are still very common among the tribes of the upper Xingu which were visited later, but were not found either among the Bororo da Campanha or the Bororo of the



FIGURE 1. AIR VIEW OF DESCALVOS SHOWING LOCATIONS OF THE CEMETERIES



FIGURE 2. A SECTION OF CEMETERY II

São Lorenzo valley. The mussel shell beads and the cylindrical jasper kind are not to be found among the Bororo or those groups mentioned above.

The method of burial of the Bororo is radically different from what was revealed in this excavation, leaving no doubt that the cemetery must antedate the occupation of the territory by these people.

The piranha is associated in magico-religious concepts of the tribes of the Kuluseu-Kuluene region. Its jaws and teeth find practical application by all of the aborigines, being used as scrapers, or cutters. The cache of piranha jaws and teeth thus becomes meaningful.

The body was not buried always in the same position. The site revealed that it was placed sometimes on the side, and sometimes on the back, with the legs flexed at various degrees.

All of the burials were unquestionably primary, judging from the articulating position of the bones. No marks of any kind were found on the skeletal material.

The pottery is of poor quality, being of coarse clay and badly fired. The decoration that was found on several potsherds and on one small pot was impressed string pattern. The pottery ware is different from that made by the Bororo.

The lithic industry is too poorly represented to permit any conclusions. What was found is polished, and badly made. Its scarcity suggests that it was not a major industry in the culture represented. However, the stone, if not the artefacts, must have been imported from the highlands of the west or the north, since there is no stone in the region.

CEMETERY II

[Plate VIII, 1, 2]

About five miles to the west of Cemetery I, and the port of Descaval-dos, is located Cemetery II, part of an extensive archaeological site whose limits have not been determined. The land is slightly elevated from the rest of the pantanal, so that during the floods it forms an island, but at the height of the dry season it remains partly surrounded by a large lagoon which is connected with the Paraguay only by marshes. When the water is high it can be reached by canoe from the Paraguay. It constitutes an ideal location for a native village, in that it is situated in the pantanal where game is plentiful, it is close to the river, though hidden

away and protected by swamps, and it is always close to good water. The site is completely covered with thick jungle growth.

The same men that excavated Cemetery I were employed on Cemetery II, and they proved very ingenious in solving the new problems that arose, in clearing the site, in excavating and in transporting the archaeological material to the port.

An area seventy-five by twenty-five metres was cleared of all underbrush, and staked out in five-metre squares. Though this did not include the entire site, it was enough for our purposes. On the removal of the vegetation, clusters of rocks were found scattered about. In every case such clusters marked the location of a group of funereal urns. Another way of determining fertile places employed by the natives was to stamp on the ground. If this happens to be done over an urn a sound like beating a drum is produced.

At several places the site had been disturbed by the natives and ranchers, who sought to excavate the large urns intended to be put to domestic use. They had not been always successful in taking out whole pots, as several broken urns attested.

It was so late in the season that rains did not interfere with the excavating, but being away from the ranch settlement, we had to contend with cattle and peccarys that formed the habit of visiting the site at night. It became necessary to build a strong fence about the area being excavated.

Three smaller sections of the cleared and staked area were opened: one close to the lagoon, measuring thirty metres square; the second, twenty-five metres away from the first and to the extreme right of the cleared section; and the third, about forty metres away from the first and to the extreme left. In this manner, a test of the site was made as to whether it contains the same type of archaeology throughout.

The most fertile of the sections excavated was the first, and since the others differed in no way from it in the style of pottery or burial found, it only will be described.

In general, the material was in a better state of preservation than in Cemetery I, due probably to the larger and coarser pottery being able to resist the action of water and other disintegrating agents better. Very little skeletal material was successfully gotten out, as in the first site.

At places the excavation was continued to almost two metres, but the walls of the cuts revealed no difference in the soil, not even the humus line being marked. In this respect it was similar to the first cemetery, no change of soil occurring until the hard pan was reached.

Surface Finds

These include only material that was found over the areas excavated or to a depth of a few centimetres. As in the first site, the entire area was covered with potsberds, which in most cases revealed nothing that was not learned from the whole pottery to be found under the surface. However, a few pieces of decorated pottery were found. These are shown in Plate XX, 1-4. The decoration is painted in red on red ware. It is rectilinear and consists of broad red lines which are drawn either parallel to each other or criss-cross.

Other finds include:

On the very surface two iron tomahawks, of the usual type.

Three unhafted polished hornfel celts, beautifully made. The average size is about eight centimetres in length, five centimetres in width at the cutting edge and two centimetres at the butt. The greatest thickness is three centimetres. These were found about fifteen centimetres below the surface. [Plate XX, 7.]

One celt, of the approximate size of the above, with a slight groove encircling the butt.

Several Jasper cylindrical beads of the same type as those found in Cemetery I.

One large polished quartzite bead.

One large polished hafted quartz pendant [Plate XX, 5].

A small undecorated pitcher-shaped vessel with out-turned rim, crude handle and flat base. It measures but four centimetres in height and is characterized by exceptionally thick walls. [Plate XX, 15.]

Four small round pottery vessels of hemispherical shape with thick rims. Three of these are decorated with painted designs in red.

(a) This is the largest, measuring ten centimetres across the top, and seven in height. Its walls are disproportionately thick, and the rim is made even thicker by a roll of clay, forming the upper border of the painted design, the other being formed by another roll accentuated by incised lines, on each side. The painted decoration is in red, consisting

of parallel lines, criss-cross, and filled-in triangles. A section of it is shown in Plate XX, 9. Close to the rolled rim on one side, the vessel bears a smooth, round hole less than one centimetre in diameter. It was unquestionably put there intentionally by the potter.

(b) This specimen is of identical shape as (a) but smaller, measuring but seven centimetres across the top and four centimetres in height. It bears the rolled rim, and incised lines. The painted decoration is black and consists of lines and rectangular figures, sectioned off. The hole close to the rim again appears. [Plate XX, 9 a.]

(c) Of the same size as (b), and is identical with it except that the rolled rim is heavier and does not bear any painted decoration.

(d) This is the smallest of the four, and is identical with the others, only differing in the painted decoration, which consists of diamond and triangular figures filled in with parallel horizontal lines. The ware is red and the decoration is in red. [Plate XX, 9 b.]

(a), (c), and (d) were found in close proximity to each other at the same level, thirty centimetres below the surface, but not in association with any of the urn burials. (b) was found also about thirty centimetres below the surface and in the section where the urns were closely packed.

That the hole served the purpose of passing a string through it in order to keep the vessels suspended seems to be a reasonable assumption, but as to their probable use little that is definite can be said. One of the Bororo da Campanha workmen offered the information that in his boyhood he had seen similar vessels used by the girls in the catamenial periods, especially during the period of the puberty initiation ceremony in connection with fasting. These vessels were used as measures for the amount of water and food the girl was permitted to have; whether it was per day or per meal he could not say. However, the ware is not of the Bororo style, and such vessels were not found in use among the Bororo of the São Loreuço region, so that this suggestion cannot be taken as conclusive.

Another find consisted of several conical bone points, with concave bases, similar to those found on Bororo arrows, and also on the arrows gotten in the Kulusen-Kuluene region. [Plate XX, 6.]

Five pottery spindle whorls of the form shown in Plate XX, 8.

Between a depth of thirty centimetres and hard pan, we came upon a large number of closely packed pottery vessels, some of which con-

tained fragmentary bone material. Plate VIII, 2 shows part of the excavation. Besides a great quantity of aquatic shells, which were found at all levels in the soil, below thirty centimetres, nothing was found but pottery and skeletal material. Not a single fragment of any artefact could be located, though the earth taken out was most carefully sifted.

To facilitate the discussion, the pottery can be roughly divided in the following types, according to the shape and size:

(a) Large urns with conical bases, bulging sides, forming shoulders, narrow mouths, either with or without a rim collar, and undecorated. These for the most part were found to be empty, except in those cases where the cover had been broken, in which cases they were filled with debris. [Plate XX, 19-21.]

(b) Globular urns, smaller than (a), with or without rim collar, with or without rudimentary handles, undecorated, always containing skeletal material. [Plate XX, 17, 18.]

(c) Bowls undecorated, but for one, of various sizes, used as covers on the urns. [Plate XX, 14.]

The pottery ware is crude, badly fired, and the larger urns are never perfectly shaped. The surfaces show the marks of the coiling technique.

The following units are typical of the site:

Unit A [Shown in the right foreground in Plate VIII, 2.]

A large urn in good condition, of red ware, with a rim collar, measuring .85 metre in height and .80 metre at the greatest diameter. Originally it had been covered with an inverted bowl, the fragments of which were found inside it. It contained no skeletal material and no artefacts.

Unit B

A unique burial group seen immediately behind A in Plate VIII, 2. It consisted of an urn of type (b), bearing a bowl cover. The urn was empty even of debris, but on the outside and packed close to it were remains of three disarticulated skeletons. The bones were in such a bad state of preservation that few of them could be taken out. No artefacts of any kind were found in association.

Unit C

A large urn bearing a bowl cover, the inner surface of which bears a painted rectilinear design in red. The bowl is a large one, measuring forty centimetres across the top and fourteen in depth. In the bottom of the urn were found fragments of bones.

Unit D

A globular urn about forty centimetres in diameter, bearing rudimentary handles. It was covered with a bowl and contained disintegrated skeletal material.

Unit E

Urn of type (a), on which rested another urn of type (b), which was covered with a bowl. Both urns contained skeletal material.

Unit F

One of the largest urns taken out, measuring 1.23 metres in height and .97 metre at the greatest diameter. This specimen is now in the Museu Nacional, Rio de Janeiro. It bears no decoration. With the debris that it contained was found some skeletal material.

Unit G

A large urn of type (a), measuring .90 metre at the greatest diameter and an equal amount in height. The sides slope in abruptly forming shoulders, terminating in upturned rim collar. It bears no decoration. It likewise was originally covered with a bowl.

BORORO DA CAMPANHA

While work continued at the cemetery site, a visit was paid to the remnants of the Bororo de Campanha, collected at a village locally known as Laguna.

The trip to Laguna was made in the company of Messrs. E. R. Fenimore Johnson, John S. Clarke, Samuel T. Hoopes, Floyd Crosby, the cameraman, and guides. The village is situated on some high ground, covered with palm and banana groves. It consisted of a few huts arranged haphazardly, with that of the headman at the edge of a cleared

space, a courtyard where the group meets whenever there is anything to discuss or celebrate.

Its inhabitants were miserably poor, not having even manioc farina to offer us, so that we had to await the arrival of our ox cart, which had been left behind, to bring mate, a steer, coffee, and other foods. Our arrival was attended with a slight attempt at some ceremony, but after shaking hands with almost all of the villagers, the reception was over. Listlessness and evident ignorance of how to receive us were the main characteristics, although it was insisted that we sit down, a custom which I found to be prevalent in every group that I visited subsequently.

While waiting for the cart we took the opportunity of looking about. The huts were made of a skeleton of poles covered with buri palm leaves, which in the front of the house were placed vertically, with the leaflets interlaced. They were of a rectangular ground plan, with a true wall, about fifteen feet high. No hammocks were seen, the people sleeping either on the ground or on raised platforms, wooden frames having straps of leather to take the place of a mattress. The huts contained no further furniture. Each family had its own hut.

It was learned that only one woman of the village knew how to make pottery, but that none had been made for many years. In fact, no industry whatsoever has survived, not even the making of feather ornaments.

The bow and arrow has given place to the gun, of which there were several in the village. Acculturation has indeed gone far, the language being almost forgotten even by the older people.

After the arrival of the cart and the distribution of the food was over, they gathered by a fire in front of the headman's hut in two circles, one for the men and one for the women. We were invited to sit with the men. When all was ready, the headman began to sing to the accompaniment of two gourd rattles, which he shook, one with an up-and-down motion and the other both horizontally and vertically with a different rhythm. In turn, his song was taken up by each man. Sometimes the women and the other men would join in a soft chorus. At times, led by the oldest woman in the tribe, the women would suddenly stand up and begin hopping, holding the legs together stiffly, the arms sideward but horizontally, and, with the hopping, leaning first to one side and then the other. This was enjoyed by them, especially by the older women. Several times *chicha* was passed around. Undoubtedly the song and dance

would have continued all night had not the visitors finally insisted on retiring to their hammocks.

In the morning there was held a jaguar dance for our curiosity, for it has become quite meaningless to them, no one being able to tell exactly the significance of the dance.

An enclosure was built of burity palm leaves, roofless, which served as the dressing room of the dancer. No women were permitted to enter; the rites of dressing the dancer to represent the jaguar were evidently taboo to the women. Two singers with rattles stood in front of the man to be dressed. The dancer was painted red with urucum and down pasted on his breast. His face was also smeared with urucum. Around his arms were fastened armlets made from strips of burity palm leaf, and his face was covered with a mask made of woman's hair. The foreskin of the penis was tied with a narrow strip of burity palm leaf, for these men under their tattered European clothing still carry this string. A skirt of palm leaf strips was worn, and a jaguar robe was thrown over his shoulders. The skins of practically every species of snake to be found in the pantanal hung from his head down his back over the jaguar robe, which was worn with the fur on the outside. The inner surface of the hide was painted with geometric patterns, in red and black, but no one could explain the symbolism. A magnificent headdress consisting of many pieces, and containing feathers of many birds of the pantanal completed the costume with the addition of deerhoof rattles worn on the right ankle. The dancer was ready.

The headman facing the dancer began singing to the accompaniment of his rattles, and slowly began backing out of the enclosure, the 'jaguar' dancing before him. The other men followed in line, roaring at intervals in the song. In this manner the enclosure was left and the dance began in the open. The women and children had withdrawn either to the huts or the surrounding jungle, but when the jaguar began dancing in the open, they came up on the dead run to join the dance. The women did not sing, but the men did so excitedly. The dancer danced flat footed with legs bent and knees thrown outward, arms extended at the side. His dance consisted of violent hops on both feet, and the twisting of his body this way and that with each hop. At the completion of the song the women and children would turn and run for cover, which they did not leave until the singing and dancing were resumed. [Plate III, 2, 3, 4.]



FIGURE 1. A SECTION OF CEMETERY I



FIGURE 2. A BURIAL (UNIT F) IN CEMETERY I



FIGURE 3. YAWAUAFTI AND MEHINAKU ENCAMPTED AT THE MOUTH OF THE KULUSEU RIVER



FIGURE 4. OUR ARRIVAL AT THE KUIKUTU PORT ON THE KULUSEU RIVER

EASTERN BORORO

On the São Lorenzo river are a number of colonies of the eastern Bororo, who have not come so much under the influence of European civilization. These people still live apart in their villages and maintain their own institutions and industries. They unquestionably differ from the western Bororo in many ways.

The colonies at Pirigara, Corrego Grande (São Lorenzo), and Rondonopolis were visited by the expedition, but Corrego Grande received most attention. Sound motion-picture studies of the dances and industries were made and rich collections of artefacts obtained.

Unlike that of the Western Bororo, the village is still an orderly affair, being built in circular fashion with the men's hut in the center. The men actually live in this hut, the other houses really belonging to the women. Fishing, the cultivation of manioc, and hunting are the main occupations. [Plates IV, 2; V, 1, 2; VI, 1, 2; VII, 1, 2.]

Since an excellent study of a community of Bororo exists by Colbachini, little could be said of a descriptive nature in this brief paper that would not be duplication. Therefore, it is felt that time and space ought to be given to the Xingu trip.

AT THE HEADWATERS OF THE XINGU RIVER

My original plans were to descend the Kuluene river, which has never been descended by an ethnographer; in fact, only recently has it been mapped by Major Ramiro Noronha. However, after several conversations with Major Noronha at Cuyabá, finding that such a plan would add difficulties which would not bring any added results, I decided to descend the Kuluseu and ascend the Kuluene to the Seventh of September, and then to ascend that river. This had the advantage of avoiding a longer overland trip and many miles of rapids, and offered the opportunity of seeing more aborigines.

For purposes of reconnaissance and as a safety measure, it was decided to make use of the airplane. Accordingly, before beginning the overland trip, two flights were made to the north. We decided to depend on water for taking off and landing, since the country did not offer such open runways that landing on wheels would be safe.

Major Noronha had informed us that, after departing from Cuyabá, no landing of the plane would be possible until we reached either the mouth of the Kuluseu or the mouth of the Seventh of September, a distance of approximately three hundred and fifty miles. The first trip was undertaken with the purpose of locating the nearest large body of water and any aboriginal villages en route. Mr. Samuel T. Hoopes, one of the sponsors of the Matto Grosso expedition, accompanied us on this flight, as well as Dr. Benedito Duarte, of the *Inspeccia de Protecção aos Indios*. We flew over Chapada and took the route for the Bakairi post on the Paranatinga river. The pilot relied more on Major Noronha's verbal descriptions than on the maps which we had, and which unquestionably were too conjectural. We had to do some flying along the Paranatinga river before we were able to sight the post. From that point we flew northeast, cutting across the headwaters of the Rio Fermo, the Batovy, and numerous smaller ones, which, joining eventually, form the Xingu further north. Having located what we thought was the Kuluseu we flew northward, but we did not locate a stretch which would permit safe landing. Finally we turned back for Cuyabá. During this flight we were in touch with our radio station at Descavaldos and with the Panair station at Para. We reached Cuyabá after over six hours of flying, to the astonishment of its citizens, who had not expected to see us again. [See map, Plate XXV.]

On the second trip we went further than on the first, and finally, the river broadening out, we made a good landing at the juncture of the Kuluseu and the Kuluene. So far we had not seen any villages or canoes on the rivers. At a distance we had sighted smoke, but since the entire area is burned by Indians and Brazilians, either to make new manioc fields or for pasture, we had not attempted to ascertain its meaning. After breakfasting and waiting in the hope that some Indians would appear, we left several strips of cloth tied to a bush with some knives, fish hooks, and mirrors, and took off. We had no doubt that though we had not seen any Indians we were being observed all of the time. A few minutes later we sighted a village. Flying low and circling it several times, we spied running figures making for the jungle and a stalwart line of men holding tall bows in their hands gazing at the plane. All of the people had the appearance of being colored red, even to the head. Another interesting feature was a tipi-like structure which stood to one side of the



FIGURE 1. YAWALAPITI VILLAGE



FIGURE 2. HALF-FINISHED NARAYITE HOUSE



FIGURE 3. DETAIL OF FRAMEWORK OF NARAYITE HOUSE



FIGURE 4. COMPLETED NARAYITE HOUSE

clearing. After dropping a sack filled with trade goods, we flew back to Cuyabá, surprising its population for the second time by our safe return. On this trip we had been away almost the entire day, so that practically no hope was held out for us, though there was a rumor that we had found gold, which caused our delay.

The distance from Cuyabá to where the plane could land on the Xingu was so great that if we wanted to do any further air exploring we had to get a deposit of gasoline there. It was therefore decided that I was to transport overland ten cases of gasoline. The plane would pay my party a visit on the sixth week after my departure from Cuyabá, that being the time calculated that it would take to reach it overland, at the same place where we had landed at the mouth of the Kuluseu.

After recruiting four men in Cuyabá, three of whom were recommended by Major Noronha and proved to be the finest that could be employed, we set off for the Bakairi post in two motor trucks. Our baggage consisted of airplane gasoline, an outboard motor, gasoline and oil for it, trading goods, personal equipment and food. No tents were taken for shelter, nor canvas canoes, and so forth. Our food consisted of manioc flour, beans, rice, coffee and meat. In addition, we carried six sealed tins containing emergency rations for a few days, of which we had occasion to make use later. Our camping equipment was as simple as that of the camarada, merely a hammock, blanket and mosquito net. Our only luxury was a portable phonograph, which as long as we had it helped to keep the men and aborigines in good humor.

It took us three days to reach the Bakairi post, after an early end of the expedition was threatened by the breaking of two wheels of the truck. Beyond Chapada the road is good. This section was built by the Bakairi under the direction of Major Noronha. On our way we stopped at the Protestant Mission at Burity, where we were hospitably entertained by Mr. and Mrs. Moser. It is on the property of the Mission that the Veio de Noiva Falls are.

THE BAKAIRI

The peoples of a number of villages speaking Bakairi have been collected at the post. Simão Lopes, on the Paranatinga river. The post consists of a number of excellent government buildings in charge of an agent and a small staff. A little distance away is the Bakairi village, in

a wire fence enclosure. The effort of the *Inspeçtoria* has been to give aborigines the isolation that they want and not to interfere in anything that they may do. The tribal organization is kept as of old, and the Bakairi lead their own life in their own way. They are not forced to stay at the post, or in any way bound to do as the agent says. The agent is merely a teacher. He talks to them and advises them on any problem that may be facing them, but it is understood that they are free men and that they can do as they please.

The post maintains a school, the effort being made to teach every child to read and write Portuguese and to learn the rudiments of arithmetic. In addition to this, an attempt is made to teach them vocations, such as weaving on the loom, tailoring, shoemaking, barbering, and so forth. Generally, if a boy shows unusual talent he is taken to Cuyabá and even to Rio de Janeiro to be given further instruction. This education is not compulsory, however, though most of the Bakairi take advantage of the opportunity. It is the project of the *Inspeçtoria* to form good self-sustaining citizens of such groups of the native population as come under its tutelage.

The post has a herd of cattle and the Indians are being taught the principles of cattle raising. It is the desire of every Bakairi to own cattle. No attempt is made to turn the Bakairi into a sedentary agricultural people, it being thought unwise to attempt to transform the manner of life of the Bakairi by tying them down to the soil, when they have been used to a semi-nomadic existence. On the other hand, they are encouraged to practice some agriculture, raising manioc, sweet potatoes, some maize and cotton. Each man clears his own land yearly, and plants his foods.

In spite of the liberal attitude and practice of the *Inspeçtoria* the Bakairi have been dying fast. Fevers seem to decimate them rapidly, though all efforts are made to keep medical supplies on hand and to supply medical attention. Their life is not as strenuous as formerly, because of the improved methods, and this may account for the lowered resistance. On the other hand, there is no doubt but that at the headwaters of the Parunatinga it is less healthy than in the region of their former homes. Even the Indians from the lower Kuluseu who followed our expedition on its return to the post suffered greatly from fevers upon reaching it, though it was the dry season and there were few insects.

Geographically the post is situated ideally on a high land removed from the river and cleared of all vegetation, the jungle appearing only as a narrow fringe along the river banks. Like the rest of the high plateau it is wind swept, and generally pleasant. It must be added that contact with white people, such as is had when a small group of natives go to Cuyabá, has brought syphilis to them, and it may be their mortality is due to this.

One occupation enjoyed in former times is denied them, and that is fishing. There are practically no fish in the Paranatinga, at least up to where the post is located. Since meat is gotten only on rare occasions, and no hunting is done, the diet is mainly one of vegetables and considerably poorer than when they were living in their original state. This may also explain their lowered resistance to disease.

Very little museum material which represents their own products can be collected from the Bakairi. What has not been gotten from the Inspectoria has been brought back on excursions to the Kuluseu. Pottery has not been made since their coming to the post, according to them. The huge vessels that they possess either have been brought with them from their former homes or bartered from the tribes on the Kuluseu. It is claimed that the proper clay cannot be found in the neighborhood of Simão Lopes.

Arrows are still being made, an iron nail generally being substituted for the old bone point, but most of the arrows also come from the Kuluseu.

For the old hammock made of palm-leaf fibre the cotton hammock has been substituted, but the same open net style has been kept.

Mussel shell ornaments have also been bought from the tribes of the Kuluseu. In brief, almost anything that is found in their village must bear the suspicion that it is not a Bakairi product.

However, they have preserved a few customs, such as filing the upper teeth to a point, wearing under the European clothing the gee string, and ceremonial use of the bull-roarer, and they probably remember many of their ceremonies.

The short time spent at the post was mostly devoted to taking anthropometric measurements, which were subsequently lost on the Kuluseu, but in some notes I do find the statement that in blood groupings most belong to groups three and four, the former predominating.

Nine canoemen, recommended by Major Noronha, were recruited from the Bakairi. The nine included Paghuli, or Marcellino, and Apacanu, both of whom had lived on the Kulusen before the withdrawal of the Bakairi to the post. Both of these men can speak Anadukua to some extent, and are the only men who know how to make bark canoes. Unfortunately, their Portuguese is poor, necessitating another interpreter. Their knowledge and skill in matters of river travel made them invaluable, however.

The Bakairi have the reputation of being the best canoemen of the region. The children are taught to paddle from infancy, and become extremely skillful in paddling the clumsy and heavy canoes. The paddle used is short and narrow, and a quick, short stroke is employed, the paddler shifting his paddle from one side to the other with every two or three strokes. Steering is accomplished more by the bowman than by the man in the stern. The use of the stern paddle as a rudder is not well understood. Poling is resorted to by the man in the bow when going up the stream, in which case the efforts of the man in the stern are given to guiding the canoe, which is accomplished by quick shifting of the paddling from one side to the other. Among the Bakairi, as indeed among all of the aborigines encountered, the women are as good paddlers as the men, but they never were seen poling.

* * * *

As soon as our personnel was completed, with the addition of a young Italian explorer, Giacomo Anzil, who had been forced to abandon his project to reach the Amazon upon reaching the post, our baggage was transferred to the backs of oxen and mules, which were to transport it to the Kulusen river. The men not concerned with driving the oxen went afoot. It was indeed an odd caravan. Mounted men busy with the oxen, men afoot carrying bows and arrows and guns, long-horned oxen, small mules, filed in a long line across the wastes of the plateau. All of the men wore a red kerchief wound about the head, and the usual bantering conversation was carried on. The Bakairi, of course, wore trousers and shirts, and even sandals made of old automobile tires, in imitation of the Brazilian camaradas.

As we moved eastward and slightly north, it became more often necessary to build bridges for the animals, across small but high-banked

streams. Under the hot sun this became hard work, but in general the march was a pleasant one. The start in the morning was made at about eight o'clock, unless some beast had wandered too far off, when there was some further delay. A low fog hid the tall grass from sight early in the morning, but soon afterwards it would lift. In the early afternoon would appear white clouds in the skies that had been perfectly clear, enough to enhance the beauty of the sunsets, and no more. The region is windswept, so that though the sun was hot enough the heat was never unbearable. Camp was generally made in the middle afternoon, by some stream, in order to give the oxen a chance to graze. Skies were invariably clear at night. The temperature fell so suddenly that few slept after midnight, most preferring to huddle around the fire, to talk and drink coffee, which I allowed. Precipitation was heavy during the night, as was attested by our blankets, which were wringing wet by morning. However, the nights were not so uncomfortable that it would have justified the carrying of heavy tarpaulins.

In this manner we traveled over the rolling country. Sometimes we surprised deer that bounded off before a shot could be had, though several fell to our guns. Once Tupi, a short-haired New York fox terrier that accompanied me, roused a tapir; the other dogs joining in the chase, it was bayed and killed, a welcome event, for it supplied us with meat for several days. A puma one day caused a great deal of excitement. On being seen, almost the entire personnel gave chase, whirling lassoes, shooting arrows, whooping, yelling and laughing. It was finally shot. Several mutung, birds whose meat was found to be excellent, were killed in the jungle patches bordering the streams.

We passed near two deserted village sites which the Bakairi identified as being Kayapó. Traveling on schedule, however, we were not able to stop to investigate archaeological possibilities.

On the sixth day from Simão Lopes we entered more wooded country, necessitating cutting a way through, and on the seventh day we reached the banks of the Kuluseu river below the mouth of the Prame. This last day was marked by an accident to one of the tame pack oxen. It fell, breaking its back. For the wild steer that we had taken with us, its face covered with a leather mask so that it could not see where it was going, but naturally followed the other oxen, this was fortunate. The hurt ox was killed and its meat dried. The steer was sent back to the post

in the morning with the other oxen, with another extension on its life span. The extra men that had driven the oxen also returned to Simão Lopes, their fear of attack by the Kayapó hastening their journey back.

We were now totally out of touch with the world that we had left. The underbrush of a patch of jungle was cleared for our camp. This was always our practice, the insects and the moisture being less troublesome there than in the open. Furthermore we could swing our hammocks between trees, whereas it would have been necessary to set up hammock poles were we to camp in the open. As to danger of attack by the aborigines, it was felt that one is equally safe in the forest.

The following day the Bakairi began the search for suitable jatuba trees, for our canoes were to be made from the bark. The Bakairi set out early, without the customary breakfast, and carrying nothing but their weapons, without which they would not stir from camp. Were a man to eat before setting out to locate the trees he would never find one, they said. In case, by some fortuitous accident he did, the bark would be too thin, or too thick, or too dry, or would crack. Therefore nothing must be eaten until the trees are found. In the afternoon they returned with news that several had been located and also that a trail marked with broken twigs had been discovered running almost in a circle around our camp, indicating the presence of the Kayapó in the neighborhood. During the night it was claimed that strange calls were heard, but during our stay at this camp we were not molested.

For the comfort of the Brazilian camaradas I permitted the making of a dugout canoe; with this sort of watercraft they were familiar, but were distrustful of the bark canoes. Subsequently I had occasion to repent my decision and they their request.

In four days the Bakairi made six canoes, two of which were of good size, each capable of carrying an estimated load of fifteen hundred pounds. The dugout was not completed until the seventh day, and it proved hardly serviceable then. Its only baggage was two cases of gasoline, and it gave infinite trouble to its men in the rapids because of its non-flexibility and great weight.

On the other hand, the jatuba bark canoe is flexible; this feature, combined with the thickness of the bark, diminishes the chances of perforation or capsizing on hitting a submerged rock or tree, which cannot be avoided, especially in the upper waters of the rivers. Such a

bark canoe suffers little or no damage where a dugout would either capsize or split. Canvas canoes would tear too easily.

When a jatuba tree suitable in size and condition of the bark is found, a platform of slender poles is built around it. Three upright poles are set up forming a triangle around the tree. Cross pieces in which the worker stands are lashed across from pole to pole. The outline of the canoe is then marked on the tree and is peeled off carefully by driving in flexible wedges in between the bark and the wood.

The bark thus gotten is bent into the proper shape by building a smoldering fire on its inner surface and by means of poles used as levers on the sides, forming eventually a framework in which the canoe is wedged. The bending in of the sides too much is prevented by cross pieces. Sometimes the maker etches out a design on the outer bark.

The canoe thus obtained is a shallow affair and practically flat bottomed, which gives it stability. The bow is open and clay is used along the edges as a bank to keep out the water. The stern is raised somewhat but often water enters by it likewise.

The Bakairi, while making the canoes, fasted until the end of the day's work, when they ate pure food, in this case rice, farina and meat. It was explained that really they should have eaten nothing but piranha and biju, foods that we did not possess. Sexual abstinence is necessary, and were some women in the catamenial period to pass nearby, the bark would split. After work is begun no one, in fact, must approach, and if he, unaware that a canoe is being made, does come near, he must not leave on any account.

Though we found other signs of the presence of aborigines in the neighborhood we never saw them; but that we were being watched carefully, there was no doubt.

With overloaded canoes we finally embarked on the next lap of our journey to the mouth of the Kulusen river. For another seven days we worked in the rapids, fatiguing and morale-destroying work. Often we had to cut our way through fallen trees; for long distances canoes were dragged over dangerous stretches; many times the canoes had to be unloaded and the luggage portaged. The men worked naked in the water, and it remains a marvel how we came past the rapids without having suffered some serious injury and without having lost either canoes or baggage. However, the work in the water told on the men

and a number went on the sick list with fever. From this time on, at least three of my fifteen men were daily suffering from some malady that incapacitated them for hard work.

Just below the rapids formerly were located a number of Bakairi villages, as reported for instance by Von der Steinen. We passed the sites of the villages known as Marika, Igueti, Maimeti, names meaning mosquito, harpy eagle, and turtle, respectively.

At this time some of the camaradas began to show restlessness, especially one man that I had brought from Descavallos to act as my foreman but who had failed in most of his duties to show the efficiency necessary. This, the fact that there was so much illness, and because we were behind our schedule, urged me to make use of the outboard motor now that we were in clear water. Accordingly three canoes were lashed together and the other four were towed in pairs. We made good speed, but an odd change came over the men. From being expert canoemen they became clumsy in their movements, as if that were the first time that they had seen canoes. Also, having nothing to do, they became increasingly restless in their places. This resulted in disaster several days later, after we left the Anahukua, at whose port we had encamped.

Pressed for time in order to keep our scheduled meeting with the plane at the mouth of the Kulusen, the Anahukua village was not visited. We camped opposite their port late in the afternoon, and soon afterwards Aloike, the chief headman, and some of his followers, appeared on the opposite bank. He came alone, since none of his men apparently had the courage to visit us. A few gifts were made to him and he went over, promising to be back in the morning with his people and food for us.

Aloike kept his word, for in the morning the opposite bank was crowded with naked men, women and children, carrying calabashes filled with farina, baskets filled with biju, and piki wrapped in leaves. Our phonograph kept them amused on their crossing over, but our presents to them interested them more. In the few hours that we stayed with them I tried to make as many notes as possible and collected a number of objects—work that was of no avail, for a few hours later everything was lost under fifty feet of water.

Authority among the Anahukua did not exist. It was in vain that Aloike tried to impress us with his power; everyone behaved as he



FIGURE 1. MELANESIAN MEN AND BOYS



FIGURE 3. KINKUTL WOMEN



FIGURE 2. TSUYA WOMEN



FIGURE 4. KALAPULU MEN

pleased. The women were as outspoken as the men, but it was noticed that the younger women kept behind the older, peering over their shoulders, a custom that was observed among the Bororo and the Bakairi also.

Propelled by the outboard motor we covered a great distance, until late in the afternoon three canoes were capsized by one of the men who lost his head. This occurred in one of the deepest pools in the river, and all our efforts to recover the canoes failed. Making an inventory of our resources we found that all of our dried meat was lost, most of the sugar, a good portion of the salt, beans, rice, and farina. For this last we were not concerned, for we could buy it from the Indians. More serious was the loss of most of the ammunition, some rifles, revolvers, knives, over half of our trade goods, including most of the hardware, the cameras, anthropometric instruments, Schick and Dick Test material, blood grouping sera, and all of my notes and specimens. We had lost enough beans and rice to last us some four weeks with care, and a sufficient quantity of coffee. I decided to go on anyway, but as a matter of fact we were not able to move in any direction, since the few small canoes would not carry all of the personnel.

On the second day after this event a Mehinaku appeared in a canoe with his wife and two children. Understanding our plight, he paddled to his people further down stream and the next day returned with men and canoes, having traveled day and night to reach us quickly. In the meantime the plane had flown by on its way to the meeting place, without having seen our smoke signals.

Paddling all day and a good portion of the night, we arrived at the Mehinaku port of a village on the right bank, in the process of being built. Farina and biju were given us and we found the people delighted and charming hosts. Putting up our hammocks under the trees, some of us retired, but the Bakairi, though tired, sat up most of the night conversing with the Mehinaku, though each other's language was mutually unintelligible.

On the opposite bank to the port of the Mehinaku, we found a group of about twenty-five Trumai men and women. They had no canoes, but the Mehinaku ferried them across. They were exceptionally small, being both short and thin, in contrast with other peoples that were met, but always appeared to be well nourished. In the morning, when we

distributed gifts among our hosts, the Mehinaku begged that we give gifts also to the Trumai, who were a poor but good people.

Of all the groups met, the Mehinaku were the most pleasant and the most reliable. The incident of helping us to move down stream has been mentioned. Later, on making contact with the plane, we had occasion to test their intelligence and reliability further. Eight cases of aviation gasoline had been left on the sand beach where the disaster occurred; as we needed the gasoline, six Mehinaku went back and brought it to us in remarkably short time. [Plate XI, 1.]

In the morning, while some of the canoes were being patched, I visited the new village. Though only one house had been built, and it was not quite finished, a tall conical structure made of poles tied together at the top, housed a harpy eagle. I was told that that was the first structure put up. The house structure differed in no way from others that were subsequently seen in other villages, which will be described later.

The original village of the Mehinaku was on the west bank, but having exhausted the soil, they were moving to the east bank. They had a few beans and maize seed, which they were carefully keeping for planting.

With the help of these kindly disposed and gentle Mehinaku, we continued our journey down stream, meeting with groups of Aura and Auiti, and finally arrived at the mouth of the Kuluseu. In the morning some Tsuva brought us the news that the plane was several bends of the river away, and we hastened to it.

Our meeting with Johnson, Rossi, Lorber, Saucedo and Due was a happy occasion for everyone. While waiting for me, news had come to them about some white men, but our failure to put in an appearance caused them worry. Their food supplies having been almost exhausted, they had decided to fly back to Cuyabá, when we appeared.

On the sand bank where the plane was beached there were collected Amhukua, Auiti, Aura, Kamayula, Yawalapiti, Tsuva, Kuikutl, and Kalapahu, and we brought Mehinaku. Each group was jealous of the others and we had to distribute our favors equally.

Learning that I had lost my photographic equipment, Arthur P. Rossi, who had made the trip with the plane merely to take aerial photographs of the region, insisted in staying with me when the plane flew back to Cuyabá the next morning, even though the plane would not return for three weeks to bring us fresh supplies of food. Rossi was a welcome

addition to our party. Two of our men, having become troublesome, were unceremoniously flown back to Cayabá.

While waiting for our party, Johnson and Rossi had visited the Tsuva whose port is on the Kuluene river. This group has not been reported in any literature and was not on the Kuluene in 1920 when Major Ramiro Noronha descended that river.

Rossi and I with several Bakairi paid this village another visit, guided by the Tsuva that had come to see us. We took up the line of march, with two girls, carrying on their heads baskets in which were their hammocks, leading, and then I as the 'capitão,' the Tsuva, and the Bakairi, who brought up in the rear. The Tsuva men carried our baggage in their carrying baskets, which hung on the back from a thong drawn over the upper arms and across the chest. This method of carrying was preferred even by my Bakairi men. The women were never seen to carry these baskets, nor were they ever seen to carry loads in this fashion, preferring to carry everything on the head.

Due to the absence of the headman from the village there was no ceremonial reception. Most of the people were in their huts, and those that were not sought their cover. However, those that had accompanied us soon made our peaceful mission known and we were asked to sit on a log, placed in front of the men's house. Later the sub-headmen came to offer us the bird stools, and the women came with farina and a refreshing drink made from manioc. Again it was noticed that the younger women stood behind the older when dealing with us.

Because of the absence of the headman we were not received in the men's house, but instead were shown to a half-finished residential house. The entire population paid us a call there, but there was no trading.

On my expressing the wish to visit the other houses, there were signs of protest, showing that since the headman was not there, that could not be done. On my insistence, finally the same young people that had guided us to the village took us into the houses.

In one of them, living in a compartment made of mats, we found a girl. It developed that she had married a Kamayula, who was now dead, and she had escaped to her own people, who were keeping her in hiding. She proved to be the most interesting person in the village, being the local artist. The best basketry collected was made by her, the best ham-

mock, and the mat shown in Plate XXIV, 4, and she decorated everything that she made.

One of the houses was half burned down. We were given to understand that the headman had died and that the house had been subsequently burned down intentionally.

There were four finished family houses, the half-burned house, half-constructed house, the men's house, and the harpy eagle cage. The population was under a hundred.

Our reception by the Yawalapiti was by far more ceremonial. When near the village our guides shouted a number of times, and finally we were met by a group of men who told us that the headmen were before the men's house. We found there two men seated on a log smoking, surrounded by their men. The chief headman wore a diadem of jaguar hide. Both went to their huts and brought two bird stools, in which Rossi and I were asked to sit. Calabashes containing manioc water, and biiju were offered then, and we in turn distributed a few gifts to everyone present. A number of long speeches were made back and forth, but finally we were taken into the men's house, where we put up our hammocks. In the meanwhile the women had formed in line, with arms linked and the palms of the hands held against each other with the fingers interlaced, and began a song in our honor. Later in the night they entertained us in the same way.

In the morning we were awakened before sunrise by beautiful whistling from many directions. It was explained that the young men were leaving the village to hunt and fish. Everyone, even to the smallest child, took a bath, though it was cold.

Later in the day we were entertained by two clowns, painted in black and red, and wearing nut-shell rattles on the right ankle, and playing two sets of pan pipes, three in a set. The longest pipes were about five feet long, and all were played in unison. The clowning consisted of marching grotesquely from one hut to another, which was entered to the sham fright of the women.

A more serious performance was given in the men's house. The performers were three in number, apparently a specially designated group. Each played a bass pipe shown in Plate XIX, 6. They arranged themselves side by side, the middle man being the leader and wearing deer-hoof rattles on his right ankle. They played in unison with some attempt at

harmony in short, staccato notes, at the same time marching stiff-legged forward and backward. These flutes are kept hidden from the women, who though they know what they are, fear death as the penalty for actually seeing the instruments. The women also have a great deal to say about their disposition, for when I attempted to buy them, the men had to consult the women, who protested and claimed that without their flutes their life would be joyless.

In this Yawalapiti village the conical-shaped structure contained a harpy eagle. Judging from the amount of bone material on the floor of the cage, the bird is kept well supplied with food. In fact, each man and boy must share whatever he obtains hunting or fishing with the bird. In recompense he receives a feather at the periodic plucking of the plumage. [Plate X, 1.]

The Yawalapiti village was the one over which we had flown and dropped the sack filled with trade goods. We were given to understand that the women were so frightened that they even cast away the 'uluri' as a sacrificial gesture. However, on finding our sack, they understood that the aerial monster did not intend any harm to them, and so, thinking that we—gods perhaps—might have been offended at the warlike behavior of the men, they did not know what to do to have us visit the village again. We gathered that they prepared a great quantity of *biiju*, and at intervals the entire population of the village faced the south, the direction in which the plane had disappeared, and ceremonially called to us to come back to their village and share their hospitality. They had given up hope after several weeks. On our departure from this village the women and children set up a ceremonial wailing which we heard for a long time afterwards as we paddled away in the lagoon. [Plate X, 1; XII, 4.]

Following our visit to the Yawalapiti, we broke our camp at the mouth of the Kuluseu to begin our journey up the Kuluene to the mouth of the Seventh of September river, where we intended to await the arrival of the plane which was to bring us fresh supplies.

On our way we encountered Tsuva, Kuikutl and Kalapalu at their respective ports. We would find them amassed on the bank, with food for us and great curiosity. Many of them followed our canoes, so that upon reaching the mouth of the desired river and establishing our camp we found that several hundred aborigines had also slung their hammocks

in the same patch of forest. Generally three or four hammocks would be arranged around a fire for warmth. [Plate IX, 3, 4.]

With Rossi and three Bakairi, two other trips were made. One was the attempted ascent of the Seventh of September, but having gone some distance and not discovering any signs of Indians, the project was abandoned. The other was a visit to the Naravute.

The usual march for several hours was necessary to reach the village in the hot sun. Upon our sighting the village, our guide called out, and did so at short intervals until, when we were almost in the village, his calls became continuous, not stopping until we were in the clearing in front of the men's house. Then the population began to come out of the huts, led by the two headmen who brought not the customary bird stools, but stools of bark. The absence of the bird stools was significant, since the bird cage with its eagle was also missing.

Unquestionably we were shown more hospitality in this village than in any other. The women brought great quantities of manioc water, a very refreshing drink, and in every way demonstrated great joy at seeing us. Some of the women even linked arms and chanted one of their songs.

We were housed in a half-finished house because, it was explained to us, it was more comfortable than the men's house.

Great quantities of firewood, bijia, farina, and manioc farina were brought to every adult member of the group. Correspondingly, each one received some trinket or other from us, the children not being neglected in this respect.

Again we were awakened before sunrise, this time by a pounding and the voice of a man who sounded as if he were chanting a sermon. My Bakairi translated that he was exhorting the people to rise early and bathe as did their ancestors, not to be lazy and lie in their hammocks, to begin the day's work, and so forth. In fact, the entire population filed to the lagoon for its bath, and the pounding that we heard came from women busy at work making farina. The harangue lasted about a half hour, when things became quieter. The sun did not rise for an hour afterwards.

Three roosters helped to awaken the day. Not having noticed them the day before and knowing that our hosts had not been in touch with any Brazilians except for Noronha's expedition in 1920, this was somewhat startling. We learned that they had been gotten from the Anahukua.

where they had been left by an Inspectoria expedition several years before that had gone to the relief of an American-English group, searching for Col. P. H. Fawcett and his party, and who, believing that they were in imminent danger of attack from the Kamayula and other tribes, had radioed for help. However, there were no hens in the village.

Led by a young man, who we were given to understand held the office of leading all dances, the men entered our hut and began to circle around counter-clockwise, stamping the right foot. A group of women arm in arm danced outside the circle, holding the palms of their hands against each other with fingers interlocked, and chanting at the same time. Their dance consisted of taking three steps forward beginning with the right foot, pausing and stepping back. No musical instruments were used.

The ceremonial weeping at our departure was repeated at this village.

* * * *

As in the rest of Matto Grosso north of the sources of the Paraguay river, ethnographical investigation of the peoples in the region under discussion has not been carried very far. Most of the available information is to be found in the reports of Von den Steinen and the studies of Max Schmidt. In recent years the Inspectoria de Protecção aos Índios has had several expeditions, but they have been concerned chiefly with geography, and thus very little anthropological data can be gotten from their reports.

I know of no published description of the peoples of the Kuluene river. Major Ramiro Noronha descended and surveyed this river in 1920, and is well informed on the general culture of the Naravute, Kalapalu, Kuiktl or Cuicuru, but has not published his data. The Tsuya were, however, unknown to him. These tribes are not mentioned by Von den Steinen.

The approximate location of the villages of the peoples met on the Kulusen and the Kuluene are shown on the map. It will be noted that they are grouped on the lower waters of both rivers, and that the region between Simão Lopes and the village of the Analukua is uninhabited. Our canoes were made at the mouth of the Arame, and from that point it took nine days of hard work in the rapids to reach the port of the Analukua. Major Noronha encountered no villages above

that of the Naravute on the Kulene, where the rapids end. Thus habitation of the banks of these two rivers begins where the rapids end, and the rivers become deep and, in the case of the Kulene, broad. This seems the line likewise of the end of the open lands of the chapadão and the beginning of the forest belt that stretches northward to the Amazon. Thus the region occupied by the aborigines having permanent settlements is that which borders on deeper waters well stocked with large fish, where mammalian life is poorer, but bird life richer and the soil is better.

According to Von den Steinen, the Mehinaku, Aura and Yawalapiti speak Arawak; the Auiti and Kamayula are Tupi, and the Bakairi and the Anahuka are Caribs. The Trumai speak an isolated language. Keeping this classification, we must include in the Carib stock Naravute, Kuikuti (Cuicura) and Tsuva, if the fact that these groups could converse freely with the Anahuka and that my Bakairi, who knew a little Anahuka, is an indication that they have a common language.

Thus, three of the four linguistic stocks of South America that have the widest geographic distribution are well represented on these headwaters of the Xingu. The fourth, the Tapuya, is spoken by tribes in the surrounding region, most of whom are scarcely known by name. It is generally held that the Tapuya are the oldest inhabitants of eastern Brazil and that they were dislodged by the Tupi. In this region, it seems that the Tupi, Carib and Arawak are holding the more desirable locations near the rivers, and that all of them have as their common enemies tribes speaking some form of Tapuya, who are kept away from the deep waters and the fish. The most numerous are the Caribs, with five villages; the Tupi have two, and the Arawak have three. However, it must not be implied that because the villages speak languages which belong to the same stock that they are united politically. Each is a separate political community and apparently language affiliation plays little part in political or social alliances.

Since Von den Steinen's visit, the tribes have shifted their habitat somewhat. Changes of village site is often caused by the necessity of fresh manioc fields, death or warfare. The Anahukua, for instance, gave the information that their former home was to the east of the Kulene, but that following a disastrous attack by the Jaruma they

moved to the Kulusen. A comparison of the map with that of Von den Steinen will reveal that a number of changes have been made.

Formerly the four Bakairi villages were to be found below the Tsamay falls, being the first habitations that were encountered on descending the Kulusen. These have now been abandoned, and the Bakairi peoples, including those of the Rio Novo who are almost extinct, have withdrawn to the Inspectoria's post on the Paranatinga. Thus, the first people to be met are the Anahukua, whose village is on the right bank, in about the same location as that given by Von den Steinen. Several days of paddling downstream is the port of the Mehinaku, on the left bank, and the village is as usual several hours' march away from the bank. This also is in the approximate location given by Von den Steinen. At the time of our visit, however, the Mehinaku were busily building a village on the right bank. Their fields were ready, the eagle house was built with the eagle in possession, and one house was almost completed. The reason given for the movement eastward was that there was necessity of seeking better fields. Another Arawak people, the Aura, also have a port on the west bank of the Kulusen, below that of the Mehinaku, but their village must be close to the Batovy. A group of them that came to visit our camp came by way of the Batovy and Kuluene.

Below the mouth of the Kulusen there is a lagoon and buritisa on which are located three villages. The southernmost is that of the Auiti, a Tupi people, who have in addition a port on the Kulusen. Next to them to the north are the Yawalapiti, who are Arawak, and close to the mouth are the Kamayula, also Tupi, a numerous and much-feared people. Fishing in the lagoon is restricted to members of each group within certain limits.

The Kuluene river up to the rapids is in possession of Carib peoples. Just below the rapids are the Naravute, and then going northward are met the Kalapala, the Kuikuti (Cuicuru) and the Tsuva, all having their villages on the west bank. These groups are in constant warfare with the Tapuya-speaking people that wander over the territory east of the Kuluene, and sweep westward, but to the south of the Naravute and Anahukua. It would seem that the Tapuya peoples actually surround the other peoples of different linguistic stocks that have more permanent settlement.

The Trumai were met on the west bank of the Kuluseu, between the Anahukua and Mehinaku ports. They had no canoes. We learned that their village was close to the Batovy. It would seem that they also have shifted their village site since Von den Steinen's encounter with them.

All of these people live at peace with each other, though of course quarrels arose at times. Their common enemies are, however, the tribes living to the east and west, tribes that roam across the headwaters and depend on hunting rather than fishing for food.

The Bakairi gave the following list of tribes that are supposed to live in the forests east of the Kuluene: Kayahó (Kayapó); Kaviji; Turi; Maritsava; Phoi, who are pygmies, a little over a metre high; Penchoko, who are a very large people; Tsuyakadi, who also are very large; Yaruma; Suyu; Tsuruma; and, on the Paranatinga, the Tonali, who are also known as Kayabi, Kajabi; Apiakala (Apiaka) and the Pana, who are a very tall people.

The Kalapalu gave the names of the following tribes who are supposed to live to the east of the Kuluene and with whom they are permanently in a state of war: lower part of Kuluene, the Sinuya (Suya) and Tsuruna (Juruna); directly to the east of their village, the Ahinkotl, Turi, Jaruma, Tumbilyaka, Kayapo (big feet) Alitsowa, Aiiva, Yahā, Ravine, Aruga (hide away to kill people), Yarpitsu (kill people), Tahulgi (pygmies). [See map, Plate XXV.]

Our attempt to meet some of these tribes that are supposed to have their villages close to the banks of the Seventh of September river was not successful. In view of the above linguistic grouping of the tribes, it is interesting to note their attitude toward each other. The Bakairi, who are Caribs, distrust and fear the Anahukua, who are of the same linguistic stock, affirming to me again and again that they are a bad people. They were relieved when we left their neighborhood. On the other hand they praised the Mehinaku, and were not even afraid to leave their goods about. The Mehinaku are Arawaks. My canoe men were also at ease with the Aura and the Yawalapiti, and seemed to expect nothing from the Trumai, whom they considered an inferior and poor people. The Auiti were watched with suspicion, but the Kamayula were actually feared, as well as the Tsuya, Kuikutl and Kalapalu, the first being Tupi and the last three Caribs; but the Paravute were praised for their honesty and peaceful disposition, and seemed to recognize in the Bakairi,

kinsmen. One of my Bakairi was treated as a headman, loaded with presents and made to lead a dance, taking the place of the master of ceremonies, by these people.

The Mehinaku were in fear of all the tribes but the Aura and Yawalapiti, who are also Arawaks. The Kamayula and especially the Kuikuli were feared by all.

In our contact with these tribes, the fears of the Bakairi and the Mehinaku seemed to be somewhat justified, though at no time did we clash with any group. Disputes sometimes arose, springing from the difficulty of making our mutual requests understood, but we were able to settle everything amicably. At one time we were warned that the Kamayala were lying in wait for us, having resented our failure to visit their village, which was due to my inability to walk at the time. However, on passing the place where they were supposed to be in ambush, we were not molested. We were told that, having waited for us several days, their food supplies had been exhausted, and that they had gone to their village for food. The Kuikuli were a little troublesome, being somewhat arrogant, yet several of their men performed excellent and quiet service, for the axes and knives that were given them. All of the tribes met have been very little affected by the outside world; in fact, the only articles that we saw not of their own manufacture were a few nails which had been converted into arrow points. Thus, in our dealings with them we had to depend entirely on trade goods. Knives were wanted and prized by all, but axes were not wanted. Fish hooks of all sizes, and fishing lines were wanted and given to everyone. Clothing was wanted as a protection from the insects, but we were not supplied with it. Necklaces came next in importance as trade goods. Other objects were taken, but not with the same enthusiasm as the ones mentioned.

In the region under discussion, three of the most widely disseminated linguistic stocks are represented, and yet no appreciable differences in their material culture were discovered in the field. An examination of the collections that have been brought back has resulted in verifying the first impression.

All are a fishing people, and the methods employed are common to all; manioc is the other food staple, and the associated traits in the cultivation and preparation of it are found in every village; the houses are constructed in the same manner; the bows and arrows used are

monotonously similar; pottery, basketry, musical instruments, body ornament, all conform to the same general pattern. Thus in speaking of their material culture, the description of that of one village applies to all, with the possible reservation of small, unimportant local developments or omissions.

The mode of life and the dependency on the environment doubtlessly is responsible for the unity of culture. The rivers are the highways, with canoes traveling up and down, its occupants in search of fish. Meetings between groups of individuals belonging to two different villages are more apt to be cordial, especially since one may be in need of food which the other has. Inter-marriage is frequent and the interchange of goods is carried on extensively. In fact, in most cases it is impossible to be certain as to which village made a particular specimen.

The villages are composed of a few houses arranged around a clearing, where the men's house and the cage for the eagle are built. The houses are exceptionally large and well built, and are occupied by a number of related families. Each house has its headman. [Plate X, 1.]

The houses are not arranged in any well-defined manner, thus the village does not have the appearance of being well planned as one of the Bororo.

Each house has two doors placed at the middle of each side opposite each other. The door opening on the side of the house away from the clearing is used mostly by the women, the back yard being used for the preparation of manioc bread, or farina, and so forth. The houses are built with light grass-thatched walls, which afford good protection against cold and rain.

There is some difference in the care with which a house is built. Of those seen, the Naravute seemed to have them more fastidiously constructed.

The ground plan is in the form of an ellipse, about ten metres in width and twenty in length. About five metres from each end and in the center the three main posts are set deep into the ground. They are about twenty centimetres in diameter and stand about eight metres above the ground. A ridge pole is lashed on top. A wall one and a half metres in height is made of posts of approximately the same thickness as the main posts, set about fifteen centimetres apart. Then long, thinner poles are lashed to these posts, their tops bent inward so as to meet, and



FIGURE 1. YAWALAPITI WOMAN POUNDING MANIOT



FIGURE 2. YAWALAPITI WOMEN PREPARING MANIOT FARINA



FIGURE 3. NARAYUTE MAKING BUDU



FIGURE 4. YAWALAPITI POLYGENOUS FAMILY

lashed together. To keep them secure they are lashed to the other poles running transversely, and heavier short poles are lashed to the ridge pole, resting on and lashed to the bent poles which form a sort of false roof. The entire structure is then covered by a sort of light framework of lashed horizontal pieces and is thatched with grass, leaving an opening between the false roof and the ridge pole as a smoke hole. The ends of the ridge pole are prolonged and thatched decoratively. [Plate X, 2-4.]

The inside of the house contains a central platform on which valuables, such as farina, basketry, and so forth, are kept. Each family has its own corner taken up by the hammocks, implements, and valuables, and its fireplace built close to the hammocks for warmth during the cold nights. There are no compartments except when a birth takes place, when a section is screened off by woven mats.

The entire community shares in the building of a house, which takes many months. The women do the lighter work, but the actual building is in the hands of the men and boys.

The central posts are often decorated with geometric designs, which are often colored in red and black. No special significance seems to be attached to them, but this must be taken with caution, since the lack of proper interpreters made the investigation of symbolism in art an impossibility.

Some of the houses seen, those that were constructed poorly and were smaller, such as the men's house, contained only two central posts. The Yawalapiti men's house had no doors.

The men's house, outside of being relatively poorly constructed and smaller, has a ground plan that is closer to the circular. The inside is empty of all furniture, except that two logs running lengthwise to the house are placed a little raised from the ground against the main posts. On these logs the men sit when at work or watching some performance. It is in this house that the sacred flutes which must not be seen by women are played. For this reason Von den Steinen refers to such a house as the flute-house.

Though it is used as a meeting place of the men, and the women are excluded from it, it is not the living quarters of the men as it is among the Bororo. The boys and the men live in the family houses, sleeping, eating, working and loafing there. This house is reserved for ceremonies

and for guests. Generally, outside and in front of the house there is a log on which newly come visitors sit, until the bird stools are brought.

On our visit to the Tsuva we saw the charred framework of a house, and upon inquiring about it, we were informed that on the death of one of the inmates of the house is burned down. The Bakairi confirmed the existence of this custom among their people.

The fields are situated close to the village and are always cleared forest land. The trees are burned down, sometimes cut down and burned, as well as the underbrush. The ashes give greater fertility to the soil. The manioc cuttings are then planted. The men do, as usual, the heavy work, the women helping as much as they can.

Most of the groups cultivate nothing but the bitter manioc or cassava, but a few of them have maize and sweet potatoes, neither of which are extensively cultivated. The Arawak groups seem to be better and more interested husbandmen. The Mehinaku had maize seed and sweet potatoes. The Yawalapiti had maize.

Of interest are the maize effigies which were seen in the houses of the Yawalapiti and Mehinaku. One ear of maize is embellished with legs, arms, a skirt and a painted visage. These figures are hung from the rafters of the roof. Some of them, instead of representing human beings, are made in the likeness of birds. Several of these effigies are in the collections of the University Museum.

The crops are transported to the village in 'carrying baskets.' The framework of these baskets is of wicker, consisting of an elliptical loop for the bottom, and similar loops lashed to it and to each other forming the sides. Each loop is filled in with a network of bark strips. These baskets are made in all sizes, some of the larger ones measuring over a metre in length. It is carried on the back, with a tumpline, also made of bark fiber, across the chest and upper arms. This method leaves the arms and hands free, while the load needs no balancing. No women, however, were ever seen carrying a load in this manner, preferring to carry on the head, a method utilized also by the men. [Plate XI, 2-4.]

When the manioc is brought to the village it is first grated to a mass. The grater is a board with piranha teeth inserted into it or bits of shell. In order to extract the juice, which is poisonous, this manioc mass is squeezed between the hands or sometimes in wicker mats. It then is put out in the sun to dry in the form of cakes. If not for immediate use,

these cakes are packed in large carrying baskets, carefully covered with leaves and stored away. [Plate XII, 1, 2, 3.]

Some of the grated manioc is made into farina, by sifting it through a basket sieve and baking it in a flat pottery pan. In this form it will keep indefinitely. If *biiju* is to be made, the grated manioc is sifted, but instead of baking it so as to dry it in small particles, it is spread out in the pan to form a sort of thin cake. This is the form in which most of the manioc is eaten. The *biiju* cakes keep for several days, and always form part of the traveller's baggage.

A non-intoxicating but nevertheless refreshing drink is made by mixing the unbaked grated and sifted manioc with water. This is the drink offered the visitors, on arrival at the village, by the women. It is served in large half gourds.

Depending almost entirely on fish and manioc for food, great quantities of both are eaten, and eaten continuously. The women begin making *biiju* before sunrise, so that those setting out to fish will be able to take it along.

In connection with the making of *biiju* fire, fans made from strips of palm leaves, or sometimes of grass, are used. To smooth out and turn the *biiju* cakes, wooden spatules are in use, generally made to suggest the representation of a snake or a bird.

In the food quest, besides the cultivation of manioc, fishing occupies the attention of the men. Though the women assist by steering the canoe and paddling, not one of them was ever seen actually fishing, though the Bakairi informed me that the women are capable of it.

Shooting the fish with bow and arrow is the most common method. It is never done from the banks or by wading in, except in the rapids. The man doing the shooting stands up at the bow of the canoe while his companion, who may be his wife, perhaps with a baby at the breast at the same time, gently paddles, keeping the canoe close to the bank. To learn to shoot fish is not easy, since both the force with which the arrow is driven into the water, its deflection upon striking the water, the motion of the canoe, and the movements of the quarry must be gauged. The bow is held upright, the arrow in position but the string relaxed until the game is seen. In case of a miss, the arrow floating on the surface of the water is retrieved with the end of the bow, the arrow being caught between it and the string. No opportunity of getting fish



FIGURE 1. MEN IN A BOAT ON A RIVER



FIGURE 2. MEN IN A BOAT ON A RIVER



FIGURE 3. A MAN



FIGURE 4. A MAN

is ever lost. Our Bakairi were imbued with the same spirit, for often the paddle would be dropped and replaced with bow and arrow though we may not have needed the extra food. This anxiety to gather as much food as is encountered was also manifested in the case of turtle eggs found in the sand banks. For those days that we travelled, each canoe at the end of the day would have gathered at least thirty or forty eggs. This food was shared generously with everyone. [Plate XIII, 2.]

Another method of fishing was with a spear. Especially in the dry season, the fish withdraw to the deep pools where it is impossible to reach them with an arrow. A spear is usually made of two sections: a wooden shaft with a large conical bone point and a reed extension to the shaft. Both sections measure about seven metres in length. [Plate XIII, 1.]

Damming of the lagoons is resorted to. A dip net with a handle about three metres long is in use, and drag nets are apparently used in season.

Fish is eaten almost raw; the only method of cooking seen was barbecuing, either by placing it on a platform over a fire or by placing it on a framework close to the fire. Salt is unknown and not liked, as evidenced when they were asked to try our food, when though hungry, none would accept it if it had been seasoned with salt.

Another food in usage, highly prized and carefully stored away is the fruit piki, which grows wild. The fruit is boiled in the large earthen pots, placed in cylindrical bark containers, about one and half metres to two metres in length and a third of a metre in diameter, sealed tight at both ends, and placed under water in some cool pool. These bark containers are reinforced with wooden slats. On ceremonial occasions they are opened and a quantity sufficient for the immediate needs is taken out to be distributed to every member of the village equally. It is mixed with water and drunk, without fermentation. Both the Yawalapiti and Naravute had these bark containers.

Pottery

Pottery is poorly developed in the region. Neither in quantity nor variety, nor in technical perfection does it compare with that of the Bororo. The forms are simple though characteristic.



FIGURE 1. ANAHUKOA WOMAN



FIGURE 2. PROFILE



FIGURE 3. YAWALAPITI GIRLS



FIGURE 4. PROFILE OF YAWALAPITI GIRL

The absence of good clay perhaps is responsible for the poorness of the industry, for tribes of the same linguistic stock in other parts make good pottery.

The most common form has a circular base and a turned out rim. The sides are thick, and the pots are disproportionately heavy. The clay fires black. In many cases the outside of the pot is painted. The top of the out-turned rim often bears simple incised designs, such as are seen on Plate XX, 12. These pots are used in the preparation of manioc farina and in boiling piki. To the Bakairi they were so valuable that they begged to be permitted to take several of them back to Simão Lopes. [Plate XII, 2.]

Smaller pots are made, sometimes with different shaped rims, such as were collected by Von den Steinen. They are comparatively rare and do not seem to have much importance in the culture. A great many of the pots are traded from the tribes further north.

Other Receptacles

However, good substitutes for pottery have been found in calabashes and gourds, which are obtained in almost any quantity and are of any desired size. They further have the advantage of being light and do not break easily. They can be made to serve as bottles, dishes, cups, spoons, and every other kind of receptacle, by cutting off a section of the neck, or a section on the side, or by splitting in two along the neck to the base. The inner surface is charred and often decorated with painted red dot designs, the most common of which is a cross made by the crossing of two sets of two parallel lines of dots. Some of the other typical designs are shown in Plate XXIII. The outside of the receptacles are also often decorated—never with red dots, but always with linear painted geometric patterns. A few are also shown in the same Plate.

A great variety of basketry exists, being made in many shapes, utilizing divers weaves, and are used for many purposes. The carrying basket has been described. Another common type is a circular flat bottomed basket of hexagonal weave. It is of especial interest since this type can be duplicated in Oceania, Africa and other regions. For temporary purposes, a basket is quickly made from a single palm leaf by braiding the leaflets together. A number of intricate weaves are known producing interesting basketry designs. [Plate XXI.]

Grass, palm leaves, and splints, are used in making basketry. Some of the baskets are reinforced and decorated with interwoven cotton thread.

Bows [Plate XXII, 8-14]

The bows are uniformly large, only those of the Aura showing a slight comparative smallness. One bow collected from the Naravute measures 262 centimetres in length.

In cross section, the most common is the slightly ovoid; the round bow appears, but is less common, and one of rectangular cross section with rounded corners that was collected was said to have been made by the Suyu.

With the tension of the string released, the bows are almost straight. The Suyu bow mentioned is curved outwardly at both ends.

None of the bows are reinforced even by lashing. The string is made of fiber or of burity leaf strands. Part of it is wound about the middle of the bow, serving as a reserve should the string break in drawing the bow.

The Bororo bows show greater specialization and higher technique. They are smaller, somewhat flattened, and highly decorated according to the membership of the owner in one of the clans. Collachini has given a good description of these.

The pellet bow, similar in almost every feature to one collected by Max Schmidt from the Guató, was collected from the Bororo.

Fish Spears

A number of spears, used to transfix fish found in deep clear pools, were collected from the Yawalapiti-Mehinaku. A Mehinaku with a Yawalapiti wife was first seen using one, and later a number were collected in the Yawalapiti village.

The spear consists of a long wooden shaft, pointed at both ends. One end receives a large bone conical barbed point; the other a long reed extension of the shaft, used only when the depth of the pool is greater than the length of the wooden shaft. The total length of the spear, including the point and the reed extension, is over six metres.

Most of the fishing is done in lagoons or bayous which contained many deep pools. The water is generally crystal clear, so that the hundreds of fish swimming about close to the bottom can be as easily seen as in

one of our city aquariums. The fisherman stands up in the bow of his canoe, while perhaps his wife is doing the paddling and steering, and after having chosen his fish, he lets down the spear into the water until the point is close to the fish, and then with a quick thrust impales it. The fish are a large size, and will struggle violently. Often it becomes necessary for the man to dive overboard holding on to his spear, and the battle is continued in the water until the fish becomes exhausted. This is attended with much laughter and jesting by the onlookers and by the fisherman himself.

Arrows [Plate XXII, 1-6, 16-20]

Proportionately with the large bows used in the region of the Kulesen and Kuluene rivers, the arrows are long and thick, measuring up to two metres in length. The arrow consists of a point of bone, wood and in a few cases of iron, a foreshaft of wood, a reed shaft and feathering and lashings which are usually functional but sometimes merely decorative.

Using the points as criteria, they can be classified as follows: 1. A bone acuminate point set on the foreshaft diagonally so as to form a barb, being bound to it by fiber string and cemented with wax. 2. Bone conical acuminate point set on the foreshaft, with a concave base, the points of which form two barbs, held on the shaft by wax cement. 3. The same as 1, but the bone point has been substituted by one of iron, made from the ordinary iron nail. Those arrows that are feathered show the sewed technique, the two feathers being but slightly spiralling. Almost all of them have a feather decorated butt, which is also reinforced by fiber lashing. The reed shaft is likewise thus reinforced, especially where the foreshaft and shaft meet. The wax used to cement the points on to the foreshaft is used on some as a decoration, always on the foreshaft. The length of the foreshaft is about one-quarter that of the reed shaft. The knobbed arrow was not seen.

The University Museum possesses several specimens of whistling arrows. These are feathered, but lack the point and foreshaft. In the place of a point there is a tucum nut shell, with slits cut out on its sides. When the arrow is shot a whistling sound is produced. These are used only in play. [Plate XXII, 6.]

Only one arrow with a bamboo blade was collected, and it was claimed that it was a Suya arrow, a tribe that was not met by our party.



FIGURE 1. TSUVA WOMAN



FIGURE 2. PROFILE



FIGURE 3. TSUVA MAN



FIGURE 4. PROFILE

The Bororo arrows show more specialization and difference in technique. They are smaller, in keeping with the smaller bows, with a finer reed and wooden foreshaft. Of the bone points, only the conical points made from the humerus of some mammal is in use. Even this point is smaller and better made than the Kulusen-Kuluene. The feathering is also quite different. The feathers, spiralled, are lashed to the shaft, not sewed.

The feathers are trimmed on both sides, but unlike the Kulusen-Kuluene type, not to the midrib on one side. The inner surfaces of the feathers are toward the shaft and each other.

Sometimes the foreshaft has many miniature barbs, and in one case the foreshaft has been serrated on two sides.

Often the bone point is lacking, its place being taken by an acuminate foreshaft.

Bamboo blades on the jaguar and war arrows are common and of two types—a flat wide blade, and a narrow grooved one.

Spears and Throwing Sticks

A number of throwing-sticks were collected, all conforming to the same type. Only one shows decorations, which consists of a basket sheath. A wooden peg is lashed to the end of the stick, serving to receive the butt of the spear. The spear is thrown in the following manner: the tip of the index finger is inserted in the hole just above the hand grasp, the arm is pulled back and the spear thrown without guiding it with the fingers.

The 'spears' consist of a reed with a heavy knob at the end, which consists often of a piece of wood covered with wax, or some heavy object. The butt is not notched. Many of the spears are inserted in a tucum nut shell with slits in it so that a whistling sound is produced when the spear is thrown. These spears are used only in a game, which consists of two parties lining up facing each other at a good distance and throwing the spears at each other. The goal is to hit one of the other party.

It seems that the function of the throwing stick with a true spear, such as is used in the Chaco for hunting and war, has been forgotten by these people. In the forest such a method of hunting would not be practicable. [Plate XXIV, 3.]

Seats

In front of the men's houses a log is usually kept, on which the men sit, and which guests occupy until bird stools, or in the case of the Naravute, bark stools are brought by the headmen of the village.

In the houses the hammocks take the place of stools or mats, except when *bijju* is being prepared by the women. In the men's house there are two parallel logs running almost its entire length, lashed to the main posts.

In the villages, sitting on the ground is avoided whenever possible. Mats, made of lengths of *taquora*, held together by two strings passed through holes in the individual pieces, are used. Such a mat is shown in Plate XXIV, 4. Often the upper surface is decorated with incised rectilinear geometric patterns, as shown in the sketch. These mats are especially used when making *farina* or *bijju*.

The bark stools seen among the Naravute which were brought to us, as the guests, in place of the bird stools, consist merely of a piece of bark about thirty centimetres long, bent inward and lengthwise. They bear no decorations of any kind.

The bird stools are of the type shown in Plate XXIV, 10, 11. They are carved from one piece of wood, the head of the bird and the tail being easily recognized, although the style is extremely simple. The bird represented is the harpy eagle, and is in some way connected with the keeping of the bird in the cage in the village as described.

Of the bark and bird stools there are but a few in the village, owned only by the headmen, and are used on those occasions when visitors arrive at the village.

In the canoes the occupants sit on sticks placed crosswise on the bottom. The paddlers hold the legs straight before them, or bent, but never under them.

When not sitting on stools, hammocks or mats, the men squat. The women double the legs under them as seen in Plate XII, 3. When standing they frequently lean on each other's shoulders, and also employ the crane's posture [Plate XII, 4].

Musical Instruments

Pan's pipes are known to all of the peoples on the Kulusen and Kuluene rivers, including the Bakairi. One type consists of five reeds

of different lengths, closed at one end. Two or three of the pipes are played in unison. Though the intervals between the lowest note and the next two in the scale are well defined, there seems to be but a very slight difference, if any at all, in the pitch of the notes produced by the shorter pipes. This type is used for practicing the music and for personal amusement, but not in ceremonies. They are easily made and are carried about frequently. Though different sets may be pitched differently, the note intervals seem to be the same, at least in the three sets that are in the University Museum collection, though they were collected from the Bakairi, the Naravute and the Kalapalu. [Plate XIX, 7.]

In the Yawalapiti village, the two clowns used pipes made of bamboo. Instead of five, they consisted of three pieces, the longest of which measured over one and a half metres. The three notes produced, though different in pitch, corresponded to the three lowest notes produced on the pipes described above. In this particular ceremony, each of the men in turn played what may be called the lead part, while the other played the accompaniment.

Single end-blown flutes, such as are illustrated in Plate XIX, 6, are common to the entire area. They were seen in the Tsuva, Yawalapiti, and Naravute village, and apparently were known to the Bakairi and to peoples of the other villages. They are made of taquara, and to be played they must be well soaked in water. The upper part is so cut out that when the flute is played the chin rests on it. At the other end, there is a narrow aperture. Four holes control the pitch of the notes. It was noted that the note intervals were the same as those of the Pan's pipes. They are used strictly in the ceremonies, and the sight of them is prohibited to the women, death being feared for failure to observe the tabu. However, not only are the women permitted to listen to them, but they are listened to with great pleasure. It was the women that prohibited the men to sell them to us in the Tsuva village, and in the Yawalapiti village, the women pretended to weep when it was decided to let us have them. Three flutes are played together in the ceremony. Both the flutes and the office of playing them in the ceremonies seem to be inherited.

Another flute, smaller than the above mentioned, was obtained at the Yawalapiti village; it differs from the others in that close to the top



FIGURE 1. KUITKUTE MAN



FIGURE 2. PROFILE



FIGURE 3. NARYUTE WOMAN



FIGURE 4. PROFILE

there is a small aperture for blowing. This type need not be wet to play. [Plate XIX, 8.]

The only other object that might be called a musical instrument, that was seen in use, was composed of a number of nut shells joined together by a string and worn by the dance leader on the right ankle. In the dance, the beat is always accentuated by the stamping of the right foot and these rattles help to make it more pronounced.

Gourd rattles were collected from the Bakairi, and they informed me of the existence among them of the bull roarer, which is tabu to the women, but neither of these were seen among the other peoples of the Kuluseu-Kuluene area.

The men were never heard to sing. In the ceremonies that are accompanied with singing, the women take that part, generally accompanying it with a dance, consisting of linking arms with the palms of the hands against each other and the fingers interlaced, and taking three steps forward and three backward, leading with the right foot. While traveling, the women were heard to sing softly to themselves, and apparently the repertoire is a large one.

Other Ceremonial Objects

The use of stools, flutes, and rattles, in connection with ceremonies has been noted. Although no ceremonies other than those described in the narrative were observed, a number of ceremonial objects were collected which show interesting features.

One of the Naravute masks consists of a piece of knotless netting with two splint rings sewed at the upper portion to represent the eyes, and with a painted geometric design in black and red to suggest the face. When worn, the net falls over the face and breast, and is kept in place by a string that is tied about the waist, and another about the head.

A Yawalapiti mask consists of a tightly woven piece of cloth, ovoid in shape, bearing a painted design in black and white, suggesting the face. Grass is attached to it on every side, so that when the mask is worn, the grass falls to the knees.

Another Yawalapiti specimen consists of a conical shaped hat with grass attached to the sides, so that it falls over the face and neck to the shoulders.

The headdress shown in Plate XXIV, 8, was collected from the Naravute, but similar objects were seen in the Tsuva and Yawalapiti village. It consists of a gourd painted with geometric figures, in black and white, with wicker and grass attachments.

Woven splint diadems were found in every village. Generally they bear geometric designs in black. A specimen from the Naravute is encircled by a band of feather mosaic. These diadems are worn by the leaders in the dance.

Miscellaneous

Combs are made of splints held in place by cotton string woven in with them. A Yawalapiti specimen is shown in Plate XXIV, 1. The splints are further lashed together by transverse pieces of bamboo. A string wrapping hides the woven designs on the body of the comb.

Tobacco is not cultivated, but some wild form is smoked in the form of cigars, though not to any extent. It is dried and kept in wicker mats.

Fire-making is avoided as much as possible. In the villages, the fires are kept smouldering when not in use. On canoe trips, fire is carried in the stern, both for heat in the early morning, and also to cook the fish that are caught.

Nordenskiöld differentiates two types of drilling appliances found in use in South America, both based on the principle of rubbing wood on wood. Type A, 'a wooden stick is twirled in a hole in another stick, and where a narrow groove more or less marked on one side leads down to the tinder, which is placed underneath the stick'; type B, 'a wooden stick, usually an arrow shaft is drilled into a slab of bamboo or wood, which is pierced whereby glowing particles of powdered wood, produced by the friction, drop down on the tinder.'

The first method was seen employed by the Bororo and also by the native Brazilian 'woodsmen' of Matto Grosso. The second method, that of piercing, was found among the Kulusen-Kulnene aborigines. The appliance consisted of four or five small pieces of bamboo or other reed, tied together on a plane and held by one man in place on the ground. A small hole is made on the upper stick so as to receive the drill which is a long reed, twirled rapidly between the palms by another individual. In this manner the drill pierced all of the sticks in succession to the

very bottom, when the hot powdered woody particles fell on tinder which was fanned to a blaze. Fire was made in about a minute by this method.

Clothing and Decoration of the Body

If by clothing we mean any object worn on the body for protection against the inclemency of the weather, or to cover the genital parts, either from a sense of social modesty, or for protection of a practical or magical kind, the peoples under discussion are absolutely naked; but if our definition for clothing should include the habitual wearing of anything on the body, then we can classify these people among those that are partly clothed.

Rarely is a man seen without a waist string. Those who sometimes dispense with it are the old. It may consist of merely a cotton or bark fiber string, or a roll of such strings, or a string of seed beads or perforated shell discs. Whatever it may be, it is tied in front. Among the peoples of the Kulene the ends are allowed to fall over the genitals, but no really serious attempt is made to keep them covered. However, it seems that a sense of shame is connected with its wearing. The following incident illustrates the point.

At a time when I was bartering for specimens, with some fifty men, women and children about, I asked for such a waist band. Though I offered to buy one for an exceptional price, no man appeared to be willing to part with this article. On adding still more objects to what already had been offered, one man offered to give it to me on the morrow. On my insisting that he give it up then, he did so with the greatest reluctance. Immediately laughter and cries of derision were directed at him, especially by the women. He withdrew with apparent shame, but reappeared a few minutes later with his composure regained. He had gone to the nearby trees, gotten some bark fiber and had made out of it a band which he was wearing. It was accepted as a substitute, and he was let alone.

In addition to this band, the men often wear cotton bands at the ankles, at the knee, sometimes only below it and sometimes covering the knee. Similar bands, or feather bands are worn on the forearms and wrists, and the young men, especially those who are not married, wear feather ear ornaments, which consist of a stick adorned with bril-



FIGURE 1. NARAYUTE WOMAN



FIGURE 2. PROFILE



FIGURE 3. NARAYUTE HEADMAN



FIGURE 4. PROFILE

hant down, generally of the macaw, inserted in a hole in the lobe of the ear. One Anahukua headman wore a headband of cotton, and one of the Yawalapiti headmen wore a diadem of jaguar skin, but these are the only occasions when a man was seen wearing any kind of head ornament, except in the ceremonial dances. In addition, some of the men, if they have them, wear necklaces of puma or jaguar claws, or a seed necklace or mussel shells, but ornaments of this sort are more often worn by the children, and not the adults.

In place of the waist band, the women wear the 'uluri.' This consists of a square piece of taquara cortex, folded ingeniously in the form of a triangle to one of the points of which is tied a thin string. Another string passes between the folds of the uluri. When worn, the triangular piece rests on the mons veneris and is held in place by one string that is worn about the loins. The other string passes between the labia majora, and is hooked behind on the loin string. Before puberty the girls wear merely the loin string, but once having assumed the uluri it is never taken off. No decoration was seen on the uluri.

The women do not wear any bands about the arms or legs, the only exception to this being in the case of the girl during the puberty initiatory period, when her legs are bound tightly below the knee and the ankles (Naravute) for a period of two months. Some wear necklaces of shell, though not if they have children, for then such articles as may be possessed are given to them, or to the men.

Body painting is practiced by both sexes, more by the tribes living on the Kulusen than those living on the Kuluene. Since this happens to be coincident with the fact that the insects are less bothersome on the Kuluene, there is a suggestion that such painting is practiced as a protection and not for magical reasons, as Von den Steinen points out. Most commonly used is urucum which is put on the entire body in a thick layer, even to covering the hair. Piki oil is likewise used, and carried along always. That this last is undoubtedly used for insect protection is well supported by the fact that it is generally put on the back where the insects become more annoying to the paddler, since he cannot easily brush them off, even when using a twig with leaves dipped in the stream for that purpose. Often the canoes stop and its occupants share this oil with one another, whether they belong to the same village or not, generously painting each other's backs with it.

During the trip, at various times, a number of men were seen that were covered completely with soot. However, it could not be ascertained for what reason this was done. By my Bakairi, several explanations were given: that the man had been working in clearing the fields, or that he had partaken in some ceremony and the soot had not as yet worn off, or that he had put it on for caprice.

The women often covered the forehead and the face down to the cheekbones with a thick layer of urucum. The children also were often so painted. This seemed to be purely for aesthetic reasons. The men never did it, and it was practiced more often by the young women. It was evidently done with a great deal of pride and pleasure, the mothers finding especial delight in painting the children in that manner every morning.

One of my Bakairi, whose original home had been on the Rio Novo, one morning appeared with the identical facial painting, but instead of using urucum, he had used soot. On my inquiring about it, he said he had done it to protect his eyes from the glare, but on being pressed he gave me the impression that there were other reasons. The anxiety of the Bakairi to appear devoid of practices which are not European undoubtedly prevented getting the real reason. Soon after our conversation he wiped it off.

The Mehinaku and Yawalapiti women bore three painted parallel lines on the wrists, on the forearm, and on the cheek. One of them was actually tattooed in this manner. One Mehinaku living with the Narayute bore painted geometric designs on the legs, too indistinct, however, to reproduce.

There is no doubt that body painting for decoration is practiced widely and whenever the mood comes upon the woman. In the case of the men, they bear no painting other than the ordinary urucum protective coating except when they take part in some ceremony. The paint is not washed off afterwards, but remains on the body until it wears off.

The universal style of wearing the hair among the men is to cut it evenly around the head, following a line a little above the eyebrows. In addition, the crown is shaven. This latter practice, like the wearing of the waistband, is abandoned by the old men sometimes.

The women cut the hair across the forehead, but let the rest grow long and wear it loose.

The heads of the boys before arriving at puberty are often shaven, but the girls wear the hair in the same style as the older women until puberty, when the hair is not cut and must be worn over the face until after the end of the initiatory period [Plate XII, 3, 4].

Body hair, especially of the genital parts, is pulled out by both sexes. Hair of the legs and arms is not pulled out unless it is unusually thick, but the trunk, the armpits, the face, receive careful attention. For this purpose a spiny grass is used. In contrast with the Bororo, the eyebrows are not taken off.

With the exception of ear piercing, which is performed on the boys, no other type of body mutilation is practiced, though the use of piranha-teeth scrapers to draw the evil out of the body in case of sickness, done by the individual himself, often leaves marks on the body. This is done also to alleviate itching.

Filing the upper teeth is limited to the Bakairi, who file the upper front teeth to a point.

* * * *

Each village is composed of a number of houses, generally about five, with a headman to each. The heads of households are interrelated, often being brothers. In each household a number of families live together, each having its own possessions, and its own section of the hut. Such a household generally consists of the headman and his wife, his unmarried children and the married females with their husbands and children. The young man goes to live in the house of his wife's father, but when he is capable of it he may build his own house.

There is a nominal head to the village. His authority, however, is limited to the ceremonial; in other things he is more of a counsellor than a leader.

The women are actually the authoritative persons in the village. Succession and inheritance is traced through them, and though the stranger deals with the men, they consult their women in everything and refuse to do anything unless the women are compliant. Often the women are openly more aggressive than the men.

Marriage takes place soon after the puberty initiations, which both boys and girls have to undergo. For the girl, the initiation consists in having her legs bound in the manner already described, covering the body



FIGURE 1. NARAVUTE WOMAN



FIGURE 2. PROFILE



FIGURE 3. NARAVUTE MAN



FIGURE 4. PROFILE

with ashes, letting the hair grow long and over the face, and keeping away from the sight of men. During this period she is taught by the old women the various duties that fall to the lot of women. Everyone in the village, men and women, feels a responsibility toward her, and watch her development with sympathetic interest. Numerous gifts are made to her so that she may become more desirable to the men. The boys undergo a corresponding ceremony, but very little data was obtained concerning it.

The method of seeking a girl in marriage seems to be as follows: After the man has given the girl's parents some presents, and has received some encouragement from the girl, at nightfall he goes to her house and hangs his hammock below hers. They sleep that way that night. On the following day, if the girl accepts the proposal she hangs her hammock below his. That being a sign that she has accepted, they cohabit that night, and are accepted as man and wife by the community. They live with the girl's parents until the man is ready to build a house of his own. Probably there are other ceremonial performances to be gone through, but a marriage not having been witnessed, no more information was had on this point.

For the boys, marriage occurs later, since often there are no girls in that community or a friendly community available for marriage. Sometimes it is the male who is lacking, and in that case the girl fares badly. However, in most of the marriages the couple seemed to be of about the same age. Only among the Bakairi did I note that several of my young canoe-men were married to much older women. Lack of marriageable women in a community often brings about a raid on another community. In the Tsuva village I found a girl hidden away in one of the houses in a special compartment. She refused to go outside. It developed that she had been married to a Kamayahua, had had a son by him who was then living with her, while the husband had died. Having no protectors in the tribe she ran away to her own people, but was kept in hiding lest the Kamayahua learn of her whereabouts and attack the village.

The usual form of marriage is monogamous. It is a purely practical custom. The middle-aged men, and the headmen often have two wives, but only if they can support that number and the children that may come from that union. A second wife is desired principally for the sake

of children. Infant mortality is high, and only a few of one's children survive. Thus the headman of the Naravute had had nine children by his first wife, but all of them had died. With the consent of his wife, with whom he has continued to live in a most lovable companionship, he married another woman, by whom he has had children that have survived.

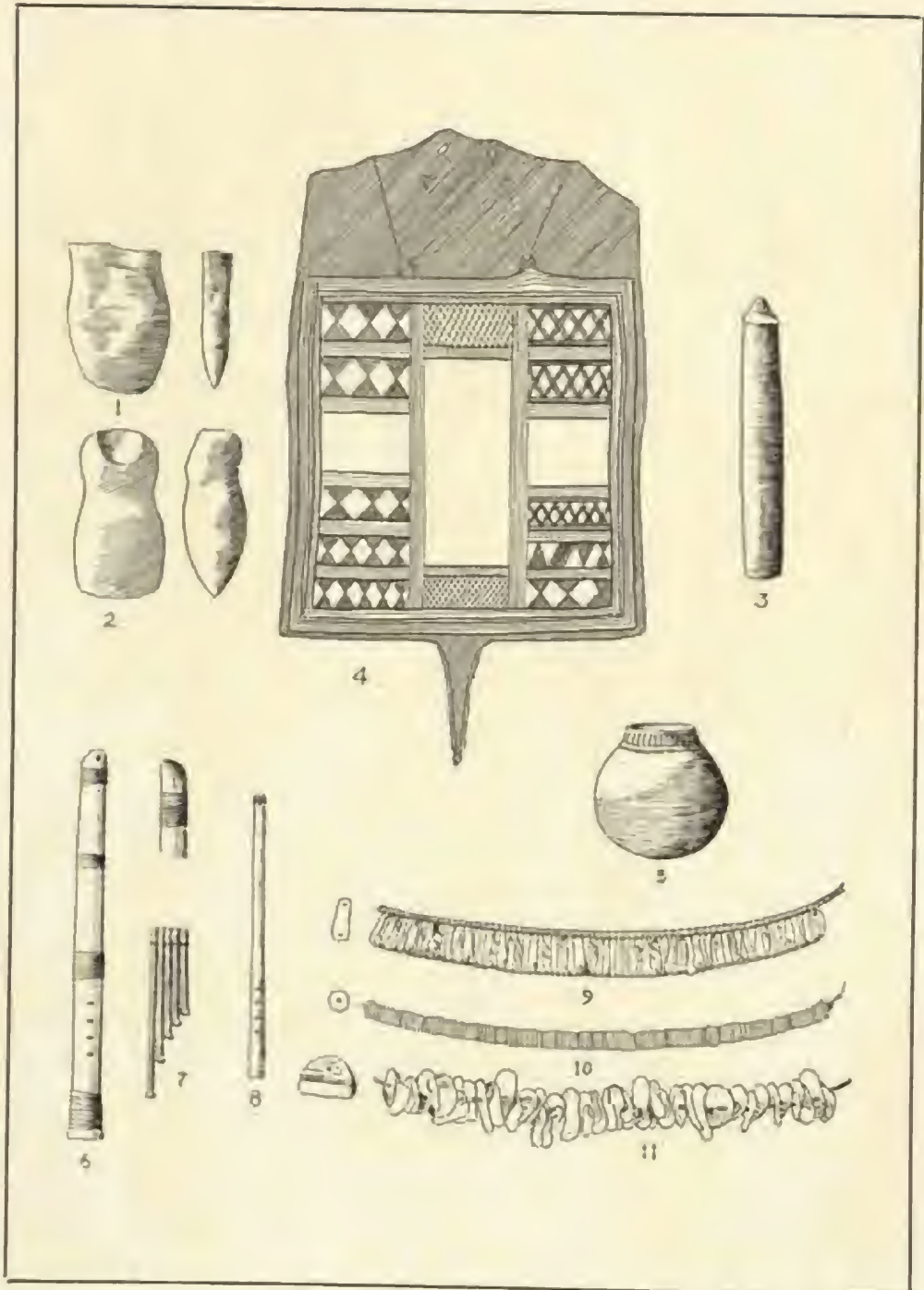
In such cases of polygamy there is no sexual jealousy between the wives. It was the wife of the Naravute headman who told of the loss of her nine children, and then pointed with pride and pleasure to another woman nursing one child and with several others about her, and told us that she was the second wife of her husband. The first wife remains at the head of the household, the second wife occupying a less important position, the relationship being more like that of mother and daughter.

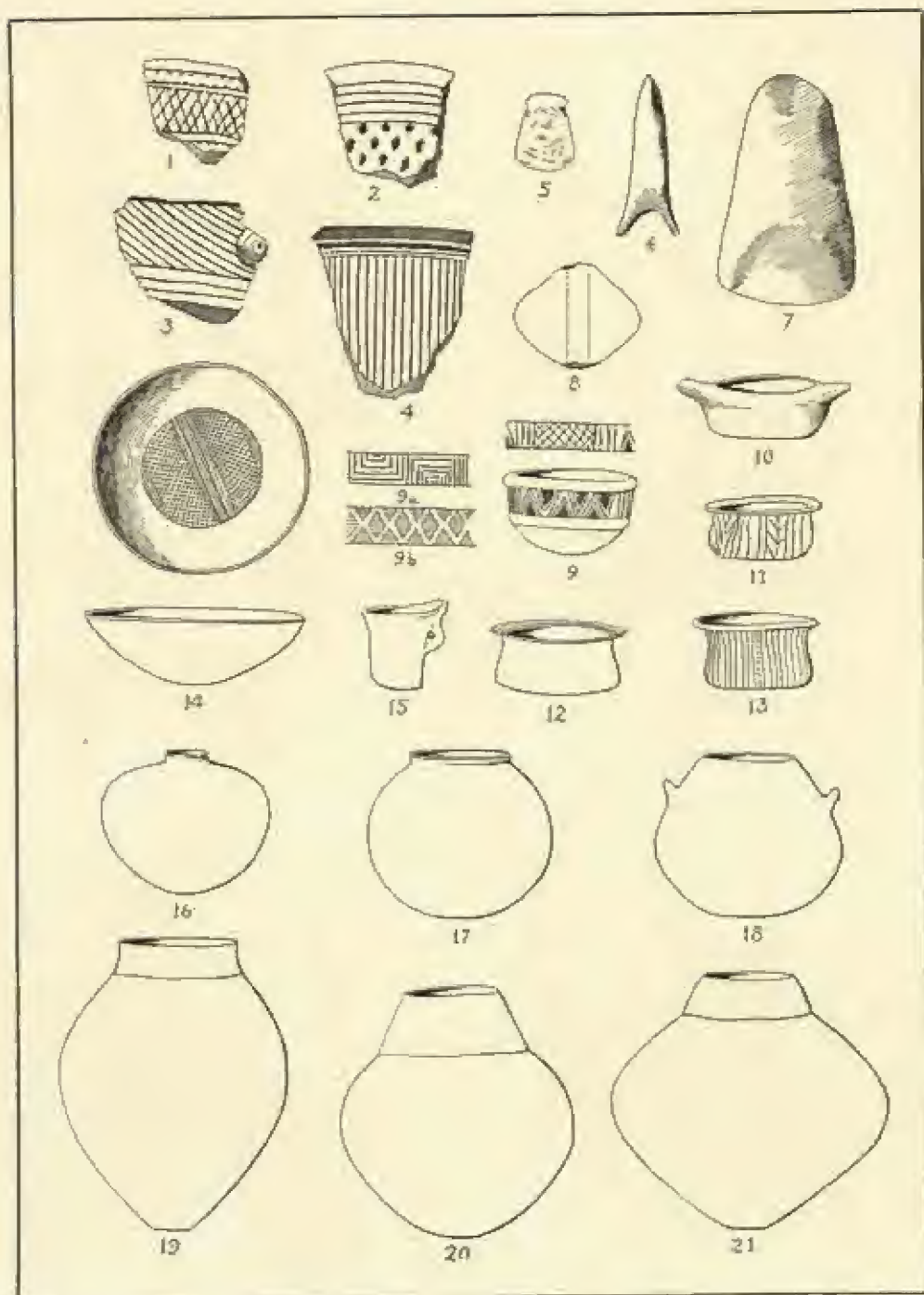
Children are the most prized possession of the parents, and they are dedicated to them with such complete abandon that it is hardly conceivable unless one is in their company. The child is nursed by the mother until it reaches three or four years of age. Food and ornaments are always for the children first. All of the men and women that received objects from us in exchange for their hospitality gave most of them immediately to the children. Their health is guarded assiduously, as is evidenced by the custom of the convade. One of the Mehinaku that accompanied us had a son about two months old. During the entire period that he was with us, six weeks, he refused to eat anything but black piranha and biju. Everything that he received from us he put away for 'pili,' his baby, or asked us to keep it for him lest the others take it away from him. Likewise the Anahukua headman kept strictly to a black piranha diet, lest the baby sicken and die.

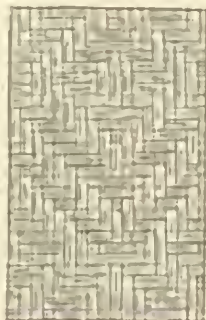
Not once did I see any adult scolding a child. As a matter of fact, not once did I note any violent altercation among the adults themselves. On the other hand, I noted no case when a child deserved to be scolded. They were full of fun, and obedient. There was no organized play for the children, but the adults, both men and women, played with them. On their side, they helped the adults, especially in the food quest. The first Mehinaku that we met followed us with his wife and his young baby and little girl of perhaps five. The little maiden spent a good portion of the day gleefully gathering turtle eggs on the sand bank, hand in hand with her mother carrying the baby, being taught where to look for nests.

The education of the children is taken in hand by the respective sexes in things that pertain to them. Thus the making of *bijju* is taught by the women, but the making of arrows and bows by the men.

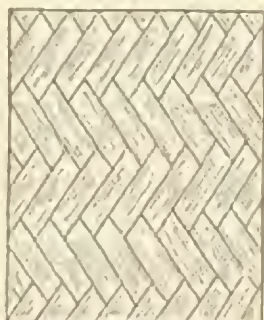
Labor between the sexes is as evenly divided as their physical powers permit. Roughly, the heavy work is done by the men, with the women assisting, and the light work is done by the women, with the men assisting. The men clear the manioc fields, while the women see to it that they are supplied with food; the women do the planting, but the men aid constantly, and it is the same way with gathering. The making of *farina*—the grating and squeezing out of the juice—and the making of *bijju* is taken care of by the women; but the gathering of wood, the packing of the *farina* for storing, the making of the baskets, and other occupations are taken care of by the men. Fishing is a man's job, as is whatever hunting is done, but the women assist by steering the canoe and doing the light paddling. When actually travelling, the man always paddles in the stern, and the woman never paddles if there are two men in the canoe. When travelling afoot, the loads are shared by the men and the women in proportion to their physical powers. In short, men and women and children mutually help one another in any undertaking.



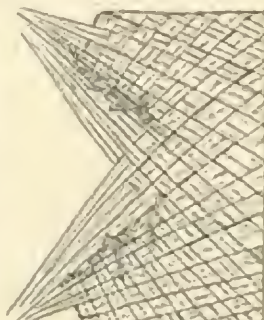




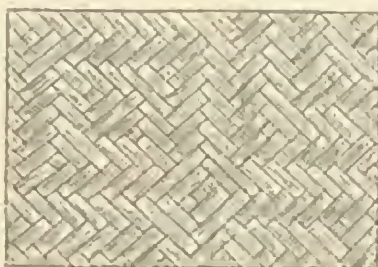
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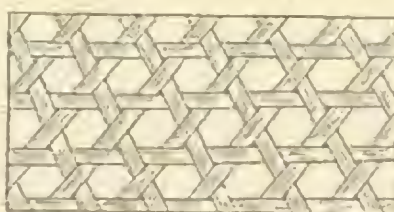
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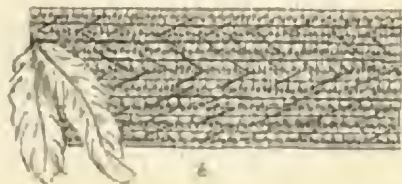
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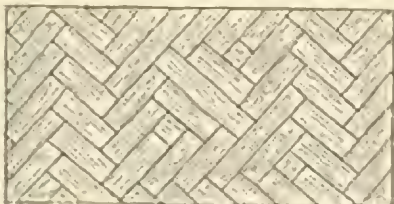
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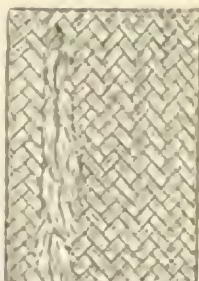
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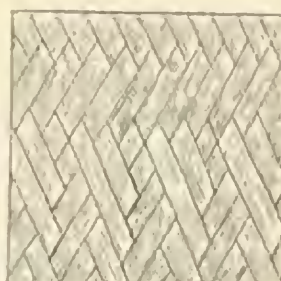
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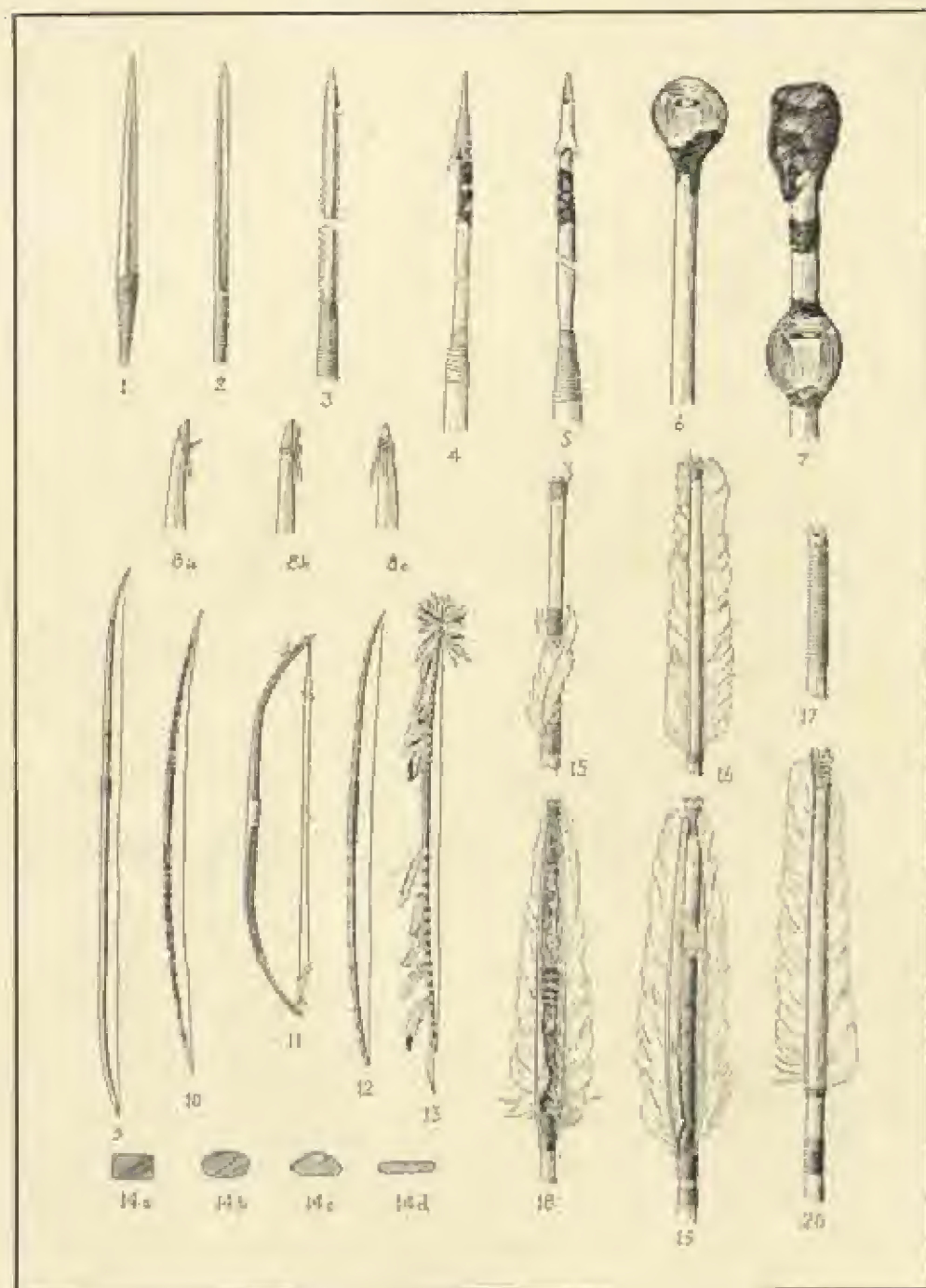
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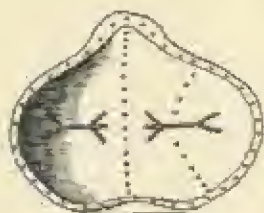
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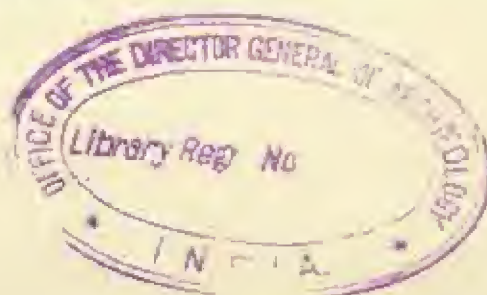


EXCAVATIONS AT UR THE POTTERY OF TELL BILLA

C. L. WOOLLEY
E. A. SPEISER

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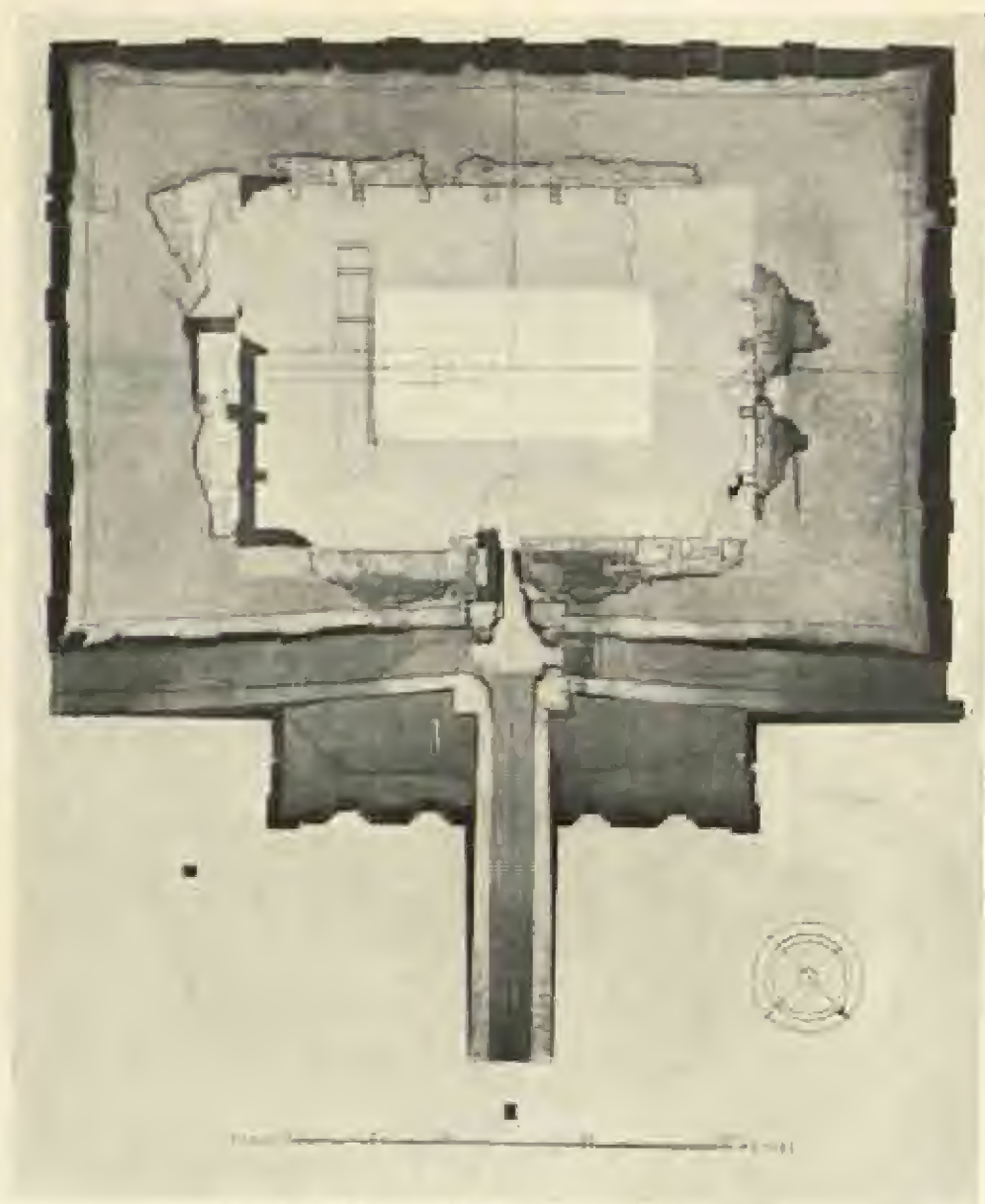
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THE THIRD DYNASTY REMAINS IN THE ZIGGURAT AT UR

EXCAVATIONS AT UR, 1931-32

By C. LEONARD WOOTLEY

THE tenth season of the Joint Expedition of the British Museum and of the University Museum, Philadelphia, began work in the field on November 25, 1931, and closed down on March 19, 1932. My staff included, in addition to my wife, Mr. J. C. Rose, who came out as architect for his second season, and Mr. R. P. Ross-Williamson, who acted as general archaeological assistant; Mr. F. L. W. Richardson of Boston, Massachusetts, was also attached to the Expedition to make a contoured survey of the site [Plate XXVII]. No epigraphist was engaged, for the work contemplated was not likely to produce much in the way of inscriptions; but an arrangement was made whereby Dr. Cyrus B. Gordon, epigraphist on the Tell Billa Expedition of the University Museum, could be called upon to give his services if and when required; actually a single visit enabled him to do all that was essential. To each of these I am very much indebted. As usual, Hamoudi was head foreman, with his sons Yahia, Ibrahim and Alawi acting under him, and as usual was invaluable; Yahia also was responsible for all the photographic work of the season. The average number of men employed was 180. This relatively small number of workmen, and the shortness of the season, were dictated partly by reasons of finance but more by the nature of our programme which envisaged not any new departure in excavation but the clearing up of various points still in doubt and the further probing of sites already excavated, with a view to the final publication of the results of former seasons; the work was therefore rather scattered, five different areas being investigated in turn.

In the published plans of the Temenos (*Museum Journal*, xxi, 2, Plates I-IV; *Antiquaries Journal*, x, Plates XXIX-XXXII) it will be observed that immediately inside the 'Cyrus' Gate on the northeast side there is a large area in which no buildings at all are shown. The ground surface here has been much denuded by water action and the

probability of any buildings of the historic periods surviving had seemed so slight that for eight years I had left the site severely alone. In the winter of 1929-30 a trial trench cut just inside the gate brought to light a bitumen-lined tank of Third Dynasty construction. Unpromising as the area was, there did seem therefore a possibility of recovering enough to fill in a blank in the ground-plan and complete our knowledge of the topography of the Temenos. This season the trial trench was enlarged in every direction. Close to the Temenos Wall there were found remains of various periods, but the walls were too fragmentary to give any plan or any idea of the nature of the buildings of which they had formed part. A very little way inland the last vestiges of the historic periods gave out and we encountered only wall fragments of plano-convex mud bricks, these also quite incoherent and so shoddy in character that the mean houses to which they belonged would scarcely have been worth excavating even had they been tolerably well preserved. Our results here were therefore largely negative. It was evident that in the time of the First Dynasty of Ur this part of the site was occupied not by temples but by small private houses; if there was a Temenos at that date it did not extend so far from the Ziggurat as the 'Cyrus' Gate of the Neo-Babylonian enclosure. Under the Third Dynasty there was here an important building to which the tank belonged, and a second (apparently, like the first, constructed by Dungi) whose southwest front lay inside the late Temenos line but its main part extended beyond that line to the northeast; at that date therefore the official buildings in this quarter stood in no relation to the limits chosen for Nebuchadnezzar's Temenos. The Kassite period saw the site once more occupied by private houses the ruins of which extended right under the foundations of Nebuchadnezzar's wall. The conclusion is that, in this part at least, Nebuchadnezzar's ground-plan was not dictated by tradition or by the existence of ancient temples which had to be included in his Sacred Area, but, in all probability, he was enlarging that area in order to provide room for new buildings of his own foundation. A single length of heavy mud-brick wall with buttressed face, of Neo-Babylonian date, which runs parallel with the Temenos wall at a distance of eighteen meters from it, may be Nebuchadnezzar's work and explain the alignment of his enclosure.



F. L. W. Richardson, owner of the site.

Contour Map of the Site of the

In the First Dynasty ruins there were found a few clay tablets and jar-sealings, but otherwise the site was barren of objects.

THE CEMETERY SITE

At the close of the season 1928-29, there was found at the northeast limit of the predynastic cemetery a grave, PG/1422, which in my report (*Antiquaries Journal*, ix, page 307) I described as apparently of intermediate date inasmuch as its contents combined the characters of the earlier and of the Sargonid periods. In the season 1929-30 there were found in the immediate neighbourhood of this grave two pits (PG/1846-7) which had been plundered in the time of the Third Dynasty of Ur but retained untouched certain subsidiary burials whose furniture was also of mixed character. In all of them the pottery was that found in graves dated by inscriptions and so farth. to the Sargonid Age. The cylinder seals were not quite Sargonid in type but manifestly later than the First Dynasty of Ur; the jewellery was for the most part late, but a gold figurine in PG/1422 recalled rather the style of the early graves, and some of the weapons were cast, and of the types found in the Royal cemetery, but there were examples of the hammered copper weapons which by the Sargonid time had replaced bronze castings. A careful analysis of all the graves in the cemetery area, worked out in the summer of 1931, confirmed first impressions. It became clear that on the northeast outskirts of the old cemetery there was a homogeneous group of graves which, while coming very close to the Sargonid in date, were yet definitely earlier than Sargon; moreover they presented certain unusual features, in that PG/1422 was very much richer than any other late grave found, and PG/1846 and 7 were large rectangular shafts each containing a number of graves arranged round their sides (the middle of the shaft, presumably the place of the principal burial, had been plundered) so that they bore some resemblance to the royal graves, for example PG/1054. It seemed to me tolerably certain that we had here interments of the time of the Second Dynasty of Ur, possible that they were royal graves. The presence of subsidiary burials gave colour to the latter view, the doubt as to the date of the Second Dynasty and the probability that it preceded the Sargonid age by a



FIGURE 1. THE DUNGI MAUSOLEUM: OUTER FACE OF SOUTHWEST WALL



FIGURE 2. GRAVE PG/1848: THE SHAFT IN COURSE OF CONSTRUCTION

relatively short space of time supported the former. That the graves were not of the First Dynasty of Ur was shown by the seals and by the pottery, for the types known to be characteristic of that dynasty were conspicuously lacking here, and some at least of the Sargonic types found had not been introduced, so far as we know, under the First Dynasty. More evidence was required however. The area in which further graves of this group could be found was limited, for the great mausoleum of Dungi and Bur-Sin, lying just to the northeast of those already excavated, had destroyed all earlier remains down to the Jemdet Nasr level, but between the mausoleum and the excavations of former seasons there was a strip of ground not yet touched, and it was accordingly marked down for clearance this winter.

The first result of our work was to expose to ground level the outer (southwest) wall of the mausoleum [Plate XXVIII, 1]. This splendid example of Third Dynasty brickwork ranks second only to the Ziggurat in quality and in preservation. Like the Ziggurat, the wall is laid out not in a straight line but in a slight convex curve, and the buttressed wall-face also is not only battered but convex vertically; the most striking feature is at the south end where the two rounded corners resting on square bases are really magnificent [Plate XXIX, 1]. Each of these corners had been breached, in each case to exactly the same height above the foundation, presumably by robbers in search of foundation-deposits: the only other corner of the building which survives (the west corner) was excavated by us, a shaft being driven down into the brickwork from above to below the foundation of the superstructure, but no foundation-deposit was discovered; whether the old robbers had any better luck it is impossible to say.

The Dungi mausoleum originally stood in a hollow, or perhaps it would be more accurate to say on a terrace cut into the slope of the old cemetery site: the top two courses of its foundation offset were exposed, but from the wall the ground level sloped up steeply to the high ground on the southwest. On the slope close to the wall we found some two hundred bricks either stamped with the Dungi stamp or bearing the finger-prints which his brick-makers favoured. They were stacked in regular rows, leaning one against the other, three and four deep, and obviously had been put here for use in the building but left



FIGURE 2. CHAIR PG/1918: DIAGRAMMATIC SECTION, SHOWING SUCCESSIVE FLOOR LEVELS, ALTARS, AND SO FORTH



FIGURE 1. THE DUNG MAUSOLEUM: SOUTH CORNER

because they were superfluous to it. It is a curious commentary on the amenities of the Third Dynasty city that a pile of waste bricks should have been let lie in the proximity of one of the most important buildings until they were covered by rubbish. Under the bricks we found a very large number of inscribed tablets, (apparently business documents, but they have not yet been read) which had been spread over a piece of matting and then the bricks had been stacked above them.

The level at which graves could first be detected, that is the level of the tops of their shafts, was virtually that of the Third Dynasty ground-level against the Dungi mausoleum, but here the slope of the ground has to be taken into account; in the time of Dungi more than three meters of deposit lay above the shafts, and since the workmen who cleared the ground for the building cut it back at a slope, they failed to discover them. Bur-Sin's workmen found and plundered PG/1846 and 7—bricks stamped with the king's name and quantities of bitumen, were found by us deep in the shafts—because Bur-Sin's annex projected to the southwest and encroached on the cemetery area, but though the vault foundations cut into the side of PG/1848, the workmen failed to detect its presence and left it otherwise undisturbed. The terrace cut back into the hill for the northwest annex of Bur-Sin lay so much higher than that of Dungi that the oversight is easily explained.

We discovered and cleared two shafts and part of a third. PG/1848 and PG/1849 (the partially cleared shaft) lie to the northwest of PG/1847, which was dug in 1929-30; PG/1850 lies to the southeast of PG/1846. All the shafts lie in a row, and their southwest sides are in absolute alignment; they are separated from each other only by narrow walls of unexcavated soil; they should therefore be almost contemporary; at any rate there must have been some mark above-ground which defined exactly their position and enabled the grave-diggers to keep their line true and to avoid disturbing the next grave. From the point of view of chronology, which was the main interest of our excavation, the fact of prime importance was the following:—A wall of mud-brick ran from northwest to southeast above the southwest edge of the line of shafts. At the northwest end, by PG/1848 and 1849, we failed to trace it, but there were remains of it over PG/1847 and at the south-



FIGURE 2. IMPRESSIONS FROM
MEMENTO-DADO SEAL OF GAEA
STREETER, GRAVE PG/1848 (1/1)



FIGURE 3. ONE OF FIVE COPPER BULLS' HEADS FOUND IN WALL
FOUNDATIONS ABOVE PG/1850



FIGURE 1. PERSONAL JEWELRY FROM GRAVE PG/1850,
BURIAL 9

east end of the excavated area it was standing to a height of 2.25 meters. It was 2.40 meters wide at the base, diminishing to 1.50 meters, and was built partly on the firm soil into which the shafts had been sunk, but for nearly half its width it rested on the filling of those shafts, and it also overhung the pit at the bottom of which was the grave PG/1422. A branch wall ran out from it along the southeast edge of PG/1850, likewise resting half on the grave-filling and half on the solid ground, and there were traces of a similar branch-wall along the northwest edge of the same grave, although these were so scanty that without the other walls they could scarcely have been taken as evidence. Possibly the main wall was built to define the new cemetery area; possibly it was, with the branch walls, part of a superstructure common to all the shafts; in any case it can have been built only after the shafts had been dug and filled in again. The mud bricks of which the wall was built were of the plano-convex type, much rounded above, measuring 0.27 x 0.17 meter with a maximum thickness of 0.10 meter. In the foundations of the wall there was found a hollow in which lay piled, one on the top of another, five copper heads of bulls [Plate XXX, 3]. The heads had obviously belonged either to statues of animals or to furniture; either, that is, to reliefs or figures in the round such as decorated the facade of the First Dynasty temple at al 'Ubaid; or to such things as the harps found in the 'old cemetery'; but they had been broken off from whatever it was to which they had belonged and had been deposited in the wall foundation as fragments. It is natural therefore to assume that they were older than the wall itself. Now in point of style the heads closely resemble those of al 'Ubaid, and contrast strongly with the many animal heads from the old cemetery; they have all the formed conventions of First Dynasty art and have altogether lost the naturalism of the predynastic sculptures; it is impossible to mistake their parentage. We have no means yet of knowing how long the First Dynasty canons persisted; the heads might be considerably later than A-an-ni-pad-da, but they cannot be much earlier; fortunately as evidence for date they are superfluous.

The existence of the plano-convex wall over the top of the shafts and the presence in the shaft PG/1848 of both rectangular and plano-

convex bricks (see below the detailed description of the shaft) prove that the graves date from the moment of transition from the plano-convex period to that in which square bricks were used for building.

At Tello it has been proved that plano-convex bricks were employed until the reign of Entemena and then went out of fashion. It is reasonable to suppose that the change took place at more or less the same time throughout Sumner, at least within the margin of a century or so; and though at Ur no definite evidence has been forthcoming we can fairly say that our plano-convex wall and the shaft graves beneath it are not later than Entemena.¹ One recognised system of dating would make Entemena come about 2800 B.C., he being the fifth descendant of Ur-Nina, who is put at between 3000 and 2900 B.C.² This would seem to be too early a date for our shaft graves.

The general resemblance between the contents of the shaft graves and those of dated Sargonic graves in the matter of headdress, most of the pottery,³ and many of the metal types, favours a reasonably close connection in time, something much shorter than the three or four centuries implied by the early dating of Entemena. On the other hand, certain noticeable differences, for example, in the cylinder seals, and in some metal types, and the survival of predynastic axe forms, and the use of plano-convex bricks in the graves as contrasted with their complete disappearance by the time of Sargon, necessitate a real time gap between them and, therefore, between Sargon and Entemena. This is against Weidner and Christian and would agree with Sidney Smith's

¹ The archaeological evidence given in the following paragraph would exclude the possibility of the change taking place at Ur later than at Tello and therefore of bringing the date of the graves down into the Sargonic period: the fact that at Tello the change comes in the middle of one king's reign and not for example, at the beginning of a new dynasty would rather suggest that the improved type of brick was borrowed from elsewhere and not a spontaneous local invention.

² Gadd, *History and Monuments of Ur*, page 50. Sidney Smith, *Early History of Assyria*, page 40, would put Ur-Nina later, about 2700 B.C., and would make the downfall of the Second Dynasty of Ur come just about then at the hands of Lagash, whereas Gadd had rather favoured the First Dynasty of Ur as the victims of the Lagash conquest. Weidner and Christian, *Archiv für Orientforschung*, Band v., page 141, put Entemena at about 2550 B.C. and therefore immediately before Sargon of Akkad (2328 B.C.).

³ Of the forty-five types of clay vessels found in the shaft graves and in PG/1422 twenty-two are found elsewhere in the cemetery area only in Sargonic graves, eleven are common to the Sargonic and to the early cemetery, four occur in the later graves of the predynastic cemetery and are not found in Sargonic graves, and eight are peculiar to the shaft graves and can therefore be called specifically "Second Dynasty" types. These figures result from the study of the 1,850 graves in the cemetery area; an enlarged basis of study might modify the figures slightly but would not, I imagine, seriously change them.

chronology, bringing Entemena down to about 2600 B.C. Again the marked difference between the furniture of the shaft graves and the pottery and cylinder seals of the First Dynasty of Ur must mean that that dynasty is considerably earlier than the graves and, therefore, than Entemena; it is entirely opposed to that manipulation of the King-lists by which Weidner and Christian make the First Dynasty and Ur-Nina contemporary, and supports Sidney Smith's contention. The yet more marked contrast between the shaft graves and those of the Royal Cemetery puts out of court the theory of Weidner and Christian that the Royal Cemetery should be dated to the First and Second Dynasties of Ur.¹

Admitting that the relative date for the shaft graves is established—that they are not later than Entemena and might be contemporary with any one of the Lagash rulers preceding him—is there any excuse for the further assumption that they represent the Second Dynasty? That there should exist at Ur graves of the Lagash period is inevitable; but is there anything to connect them with a particular dynasty of kings of Ur whose names do not occur in them and whose date is admittedly unknown? Their position in the time sequence, between the First Dynasty and Sargon, is compatible with whatever exact date be assigned to the Second Dynasty, but that is clearly not enough.

I have remarked that PG/1422 was unusually rich; indeed, for its wealth of gold and other objects it stood out from the general run of late (Sargonic) graves almost as conspicuously as did that of Mes-kalam-dug from the private graves of the early Royal Cemetery. It was also very much richer than any one burial in the graves PG/1846-50, but these were distinguished from it in another way just as the royal tombs of the old cemetery were distinguished from Mes-kalam-dug's grave. PG/1422 was a plain pit containing a single burial, the body placed in a wooden coffin, the objects put some with the body and some in the pit outside the coffin. PG/1846-50 were large shafts containing a number of bodies, buried separately and generally in coffins (some were wrapped in matting) but buried all at the same time and with elaborate and long drawn-out ceremonies. No such multiple burials

¹ In *Archiv für Orientforschung*, Band VII, page 108.

occur amongst the private graves of the old cemetery, nothing like them is found in the Sargonid graveyard; but the analogy with the old royal tombs is striking. But though most of the bodies are adequately adorned with gold, the ornaments are very uniform; the principal burials, denoted as such by their position, are but little richer than the rest, and there is none of the violent contrast that distinguished the occupant of a royal tomb-chamber from his followers in the death-pit. If these are royal graves, they are the graves of very minor royalties; and, while it is of course possible that the kings of the Second Dynasty were no more than that, I am far from claiming that these are their graves. It might be argued that they are 'death-pits' belonging to tombs placed elsewhere,⁵ possibly even above the top of the shaft; it is difficult not to push the obvious analogy with the royal tombs of older date. The closest parallel is with the royal tomb PG/1054⁶ where the shaft was filled in by degrees and the upper burials are individually complete, as here, though in PG/1054 the tomb-chamber was at the bottom of the pit. The most moderate statement would perhaps be this: we have here graves rich, but not so rich as to be necessarily royal, of a quite abnormal type, a partial parallel to which is only found in connection with kings' tombs of a much older date, and they belong to a period which may well coincide with that during which there were again kings at Ur; to connect them with the reign of those kings may explain their peculiarities; to attribute them to any other period (which would be no less arbitrary) would make them inexplicable.

In any case we have one important historical result. These shaft-graves, dating as they do before the close of the 'plano-convex' period and being demonstrably not of the First Dynasty, prove that it was the Second and not the First Dynasty of Ur that was overthrown by Eannatum of Lagash. Of the Lagash domination the excavations have produced evidence enough, but there have been no names on the Ur side to correlate its rulers with those of Lagash, and it was open to

⁵ In the old cemetery, PG/1237 was a death-pit separated from its tomb-chamber; in PG/1051 the death-pit lay under the chamber.

⁶ For a section of this see *Antiquaries Journal*, ix, Plate XXVI.

suggest that Eannatum destroyed the First Dynasty and that the shadowy Second Dynasty must be interpolated between the earlier dynasty of Eannatum and the rule of the later *patesis* Ur-Ban and Gudea; that is now shown to be impossible. It is satisfactory that the conclusion so enforced does in a measure support the evidence of the King-lists.

Description of PG/1848 [Figure 1]

The shaft measured 15.30 x 7.50 meters and was fairly rectangular; the angles were oriented to the points of the compass with tolerable accuracy. The top of the shaft was first discernible at a depth of 0.40 meter below the foundation offset of the Bur-Sin mausoleum; the bottom lay at 6.50 meters below that level. The sides of the shaft sloped slightly in from the vertical and were for the most part simply cut in the soil; in places, where the mixed rubbish gave a bad face, they were smoothed with mud plaster.

The southeast wall was preserved to a greater height than the northwest, where denudation had been more serious. Inside the shaft there was a top filling of rubbish containing a great deal of broken pottery, which at the southeast was 1.40 meters thick and sloped slightly so that at the northwest it had a thickness of 2.10 meters. The pottery was not of a very decisive nature, but contained examples which would seem to be more characteristic of the Third Dynasty of Ur than of the Sargonic age, and the impression recorded at the time of digging was that there had been disturbance here, and that the filling was of later date than the shaft itself.

At a depth of 1.40 meters the mixed filling gave place to one of broken mud brick, a packing which extended for 4.00 meters from the southeast side and then broke away and the mixed filling continued, as already said, to a lower level. Below the unbroken mud-brick packing was a wall of mud brick 0.40 meter high and 1.95 meters long; it ran at right angles to the southeast side, and the plastered face of the latter, corresponding to a branch wall, made a niche, in which was a brick altar 0.10 meter high standing on a plastered floor of mud brick 0.30 meter thick. Below this a stratum 0.70 meter thick of mixed rubbish

was succeeded by more packing of mud bricks; these, like those of the construction above, were rectangular and measured 0.26 x 0.16 x 0.85 meter. This packing extended unbroken over the whole area of the shaft, and on the surface of it, close to the northwest side, there was found a grey steatite circular stamp seal with a figure of a buffalo and

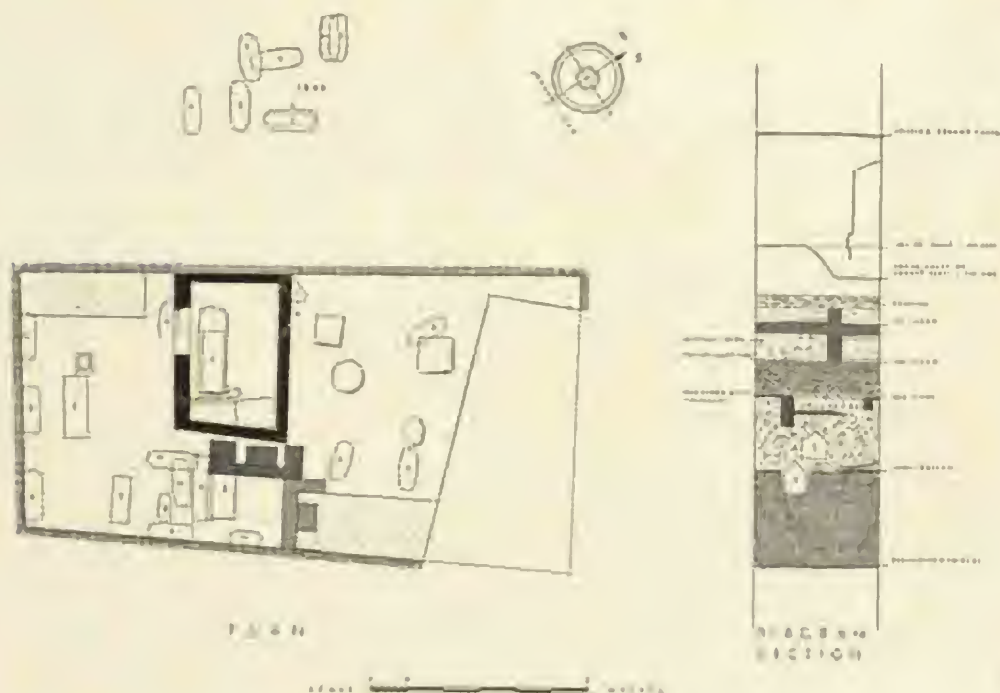


FIGURE 1. PG/1848

inscription of the Mohenjo-daro type (U. 17649; Plate XXX, 2). It was difficult to say whether the seal belonged to the floor on which it lay or to the mixed filling which here came right down to that floor level. A shell cylinder seal (U. 17650) and two circular inscribed tablets (U. 17653) were found close to it but more in the rubbish stratum and did not help to date it.

On the brick floor, in the southeast half of the shaft, there was a second walled niche and altar lying almost under the first but further

out into the shaft and oriented at right angles to it; one of the walls of the lower niche had been carried up so that its upper part could be incorporated in the higher niche; this would be evidence that the process of filling in the shaft with successive strata was continuous and done to a definite scheme. In the floor there were several shallow holes either cut simply into the packing or lined with bricks set on edge which contained wood ashes and had clearly been fireplaces.⁷ From the niche there extended along the southeast side of the shaft a sort of *mastaba* or bench of brick 2.20 meters long and set back 1.60 meters from the niche front. On the other side of the niche its southwest wall had been widened by a bench, 0.85 meter wide, of earth carefully plastered, standing 0.30 meter high and running back to the side of the shaft.

The brick floor was 1.00 meter thick; below it was a smooth clay floor in which there were fireplaces irregularly placed; one of these was a quite elaborate structure with a bitumen-lined hollow under which was a sort of vent filled with ashes.

Immediately below the clay floor there were encountered the tops of walls of mud brick forming a rectangular enclosure; these walls actually went down for 0.80 meter, but half their height was hidden, and the enclosure was surrounded by a floor lying 0.40 meter below the clay floor with the fireplaces. In the enclosure there were found small animal bones, grain and ashes, and an (early) lapis lazuli cylinder seal (U. 17656); all probably were remains of some sacrifice; in the floor outside the enclosure there were again fireplaces. The enclosure walls were of plano-convex mud bricks; on the northwest these were sloped and smoothly plastered with mud. In the west corner of the shaft at this level there was a sort of *Mastaba* standing 0.40 meter above floor level (the walls went down 0.30 meter below the floor) filled with earth and mud-plastered.

All the burials in the pit lay below this last floor; the chief burial was beneath the enclosure, another important burial beneath the altar of the second floor, a third alongside this, and the rest scattered but for the most part in the southwest part of the shaft's area. They were not

⁷ For this compare the Royal tomb shaft PG/1054: *Antiquaries Journal*, ix, Plate XXVI.



FIGURE 1. GRAVE PG/1848: THE 'TABLE' AND MODEL BOAT IN POSITION
BELOW THE ENCLOSURE WALL



FIGURE 2. GRAVE PG/1848: THE REED COFFIN

all at the same level, but all must have been contemporary in that all lay above the pit's bottom and below the floor with fireplaces which represents the first stage in the filling of the shaft. In no case was it possible to detect any pit cut from above; the bodies, in coffins or otherwise, seem to have been laid on the filling as this was put in, and therefore it can happen that one is set directly above another (F lay immediately over M).

Burial R. Below the enclosure there had been sunk in the bottom of the shaft a roughly rectangular pit large enough to contain a coffin; the pit was lined with matting. The coffin was of wood and measured 1.55 x 0.60 meter; it lay northwest by southeast. In it was a body laid on its right side, the head northwest, the legs slightly flexed, the arms bent and the hands brought across the chest. Behind the legs were the remains of a large copper cauldron; a copper bowl lay in front of the thigh, and by the waist and knees were two examples of a clay vase-type familiar in the Sargonic period. Behind the head was a copper axe—welded, not cast—also of late type. The personal ornaments were four bracelets, two of copper, one silver and one gold; on the head three gold frontlets, ovals of sheet metal, a twisted gold hair-ribbon, two gold hair-rings. Round the neck were two necklaces, one of very small gold and carnelian beads, one of large gold ball beads and very large beads of carnelian, agate and marble (U. 17813).

In the grave but outside the coffin had been set a number of objects; four of these were copper vessels, two of them large cauldrons, a vase and a shallow bowl, all in very bad condition, a copper trident with prongs 0.35 meter long, a copper dagger, and seven clay vessels.

At the foot of the grave was a second shallow depression in the bottom of the pit in which were a bitumen model boat 1.55 meters long and 0.35 meter wide, in or by which were two clay pots, and a sort of table made of reeds overlaid with a coating of smooth clay 1.00 x 0.70 meter square, by which was a (broken) clay pot [Plate XXXI, I].

To the southeast of this grave and lying underneath the altar of the upper floor was a separate burial S. The coffin was of reeds over a wooden frame and the impression of it in the soil was admirably preserved, so that not only the individual reeds could be distinguished but

even the strings which secured them one to another and to the frame [Plate XXXI, 2]. It measured 1.75 x 0.70 meter; the sides were 0.55 meter high to which had to be added the height of the gable roof.

In the coffin the body lay on its right side, the head northwest, the legs slightly flexed. On the forehead were two gold frontlets; close by was a twisted gold hair-ribbon, and near the right ear a gold ear-ring; round the neck a string of gold and carnelian diamond beads, a second string of small gold and carnelian ball beads, and a third of large gold balls and very large beads of carnelian, agate and steatite. Between the hands was a copper bowl, diameter 0.14 meter, stuck to which was a gold finger-ring and a pair of gold ear-rings. By the hands was a copper knife, a wolf's tooth, and, by the pelvis, a single shell ball bead (U. 17816).

Parallel to grave S and partly underneath it was another reed coffin, burial T. The body lay almost on its back, the head northwest and turned over the right shoulder, the legs practically straight. On the head, four gold frontlets and a twisted gold hair-ribbon; near the head was a gold finger-ring and interlaced with it two gold ear-rings which evidently had not been worn but put as offerings into the grave. Round the neck was a string of small diamond beads in gold, carnelian and lapis lazuli, and a second string of small gold and carnelian ball beads, some fluted, and some large beads, the order disturbed, of carnelian, agate and lapis lazuli with gold balls. On each arm was a plain silver bracelet; by the shoulder a straight copper pin, by the hip a shell cylinder seal and a copper axe of the same type as that found in Burial R; a hemispherical copper bowl in front of the breast, and with it a copper vase, and two clay vases both of 'Sargonid' type, completed the grave furniture (U. 17815).

To judge by their position these were the three principal graves, and their contents were also the richest, but of the others. A, B, F, G, M, and P had gold frontlets and twisted hair-ribbons and small gold objects such as ear- or finger-rings and beads; burials C, D, J, K, L (a child's grave), N, Q (also a child's grave), and U were poor; the bodies were wrapped in matting or simply placed in a matting-lined depression.

Shaft Grave 1850 [Figure 2]

The shaft was rectangular, measuring 8.20 x 4.60 meters and was first distinguished immediately under the Third Dynasty level; but as in the time of the Third Dynasty the ground sloped sharply up from the wall of the Dungi mausoleum towards the southwest, the 'level' estimated by the footings of that wall is not really reliable and the top of the shaft was more probably from one to two meters under the surface. The wall of plano-convex mud bricks ran over the southwestern side of the shaft, resting partly on its edge and partly on its filling; the burials against the southwest face of the shaft were therefore underneath the foundations of the wall.⁸ At 1.40 meters below the top of the shaft there was a layer of matting spread over the whole area.

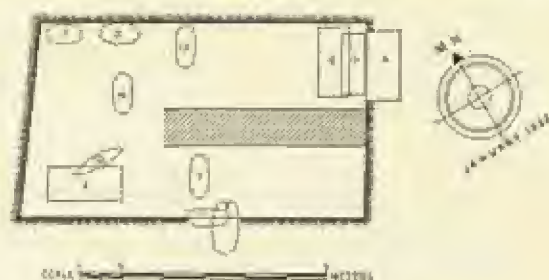


FIGURE 2. PG/1850

There were four rich burials, 3, 8, 9 and 13 (see Figure 2), of which 9 and 13 appear to have been the most important, lying side by side and at the same depth, 2.50 meters, below the top of the shaft in its east corner. In a walled enclosure to the northeast of them were the skeletons of three goats, clearly the remains of a funerary sacrifice. Both of these two burials, and number 3, were in coffins of reed matting over a wooden framework; number 8 was only wrapped in mats.

Burial 9. The coffin measured 1.70 x 0.80 meter and lay northeast by southwest; the body was on its right side, the head southwest, the legs flexed. On the head were two frontlets of thin sheet gold and a gold ear-ring; a necklace of gold, carnelian and agate beads was round the neck, on each wrist one gold and one silver bracelet; by the hip was a cylinder seal of lapis lazuli and by the feet an object of thin silver plate now destroyed. By the shoulder lay a cast bronze axe of the 'old

⁸The depth below the modern surface was 6.00 meters.

cemetery' type [Plate XXX, 1]. Two copper bowls, a copper vase and a copper strainer, a copper cauldron and a copper 'marmite' with carinated rim were in the grave, together with seven clay vessels of which two hematite-washed and burnished pots were typically Sargonic. Outside the grave there was a copper trident 0.56 meter long, and a bitumen model boat; the last lay just above the grave, and was unusually large, measuring 1.30 meters in length with a width of 0.35 meter.

Burial 13. The coffin lay northeast by southwest; the body was on its left side, the head southwest, the legs slightly flexed. On the head were two frontlets of thin sheet gold, three twisted gold hair-ribbons, a pair of gold hair-rings, and round the neck two necklaces, respectively of gold and carnelian diamonds and of larger beads of agate, carnelian and gold. On each wrist were two silver bracelets and on a finger of the right hand a gold spiral finger-ring. By the waist were two small bowls, one of silver and one of copper; by the feet a spouted 'marmite' of copper containing four more copper vessels, a bowl, a tumbler and two pots; at the foot of the grave, outside the coffin, were two clay vessels.

Burial 3 was in a coffin unusually well preserved, so much so that a model of the framework could be made to scale during the process of excavation. The body lay on its left side with the head northwest and the legs flexed. With it were a gold frontlet and ear-rings, a necklace of gold and carnelian beads, a cylinder seal, two copper bracelets, a copper bowl and bucket and three clay vessels. Underneath the coffin, between two layers of matting, were two copper spear-heads and two copper discs which may be butt ends of spears, two copper bracelets, a copper saucer, and a number of translucent calcite beads and a clay pot with burnished hematite wash surface.

Burial 8. The body was wrapped in matting; it had a gold frontlet and three twisted gold hair-ribbons, two gold hair-rings and two ear-rings, two necklaces with gold and stone beads, a finger-ring of spiral silver wire and four silver bracelets, a silver pin, straight, over the left breast, a copper spear and bowl, a copper saucer, a shell cylinder seal.

Burial 14 was also in matting and had a twisted gold hair-ribbon, one pair of gold and one of silver hair-rings, two necklaces, one with gold beads, two copper bracelets and a copper bowl. Numbers 1, 4, and 5 were only groups of clay pots with no bodies; the other burials were poor.

THE ZIGGURAT [Plate XXVI]

In the season 1923-24 the top of the Ziggurat was cleared of rubble, the plans were drawn out by Mr. Newton, and a suggested restoration of the building as it was after the restoration by Nabonidus in the sixth century was published in *Antiquaries Journal*, v, page 9, figure 1. I was at the time in agreement with most of the details of that restoration, but since then a good deal has happened. In the first place we have learnt more than we then knew about the brickwork of the various periods; and I began to be doubtful about certain points in our original scheme. Dr. W. Andrae, Director of the Vorderasiatische Abteilung of the Berlin Museum, who visited Ur in 1926, suggested to me that the bricked-up recesses in the top stage of the tower might be 'keys' for securing a case-wall to the core, quoting analogies from the excavations at Babylon. At first I was not convinced, but as I had always felt that our only explanation of these recesses was unsatisfactory, I grew gradually more inclined towards his view. A further difficulty was that our original reconstruction made the Ziggurat not very much higher than the existing ruin; it seemed doubtful whether the dilapidation of such a building to its present dimensions would account for the mass of debris which we had cleared from against its walls. This winter Mr. Rose put the matter to the test by calculating the extent of that dilapidation and the cubic contents of the debris. The problem was not simple, for allowance had to be made for wind action both in heaping up sand against the building and in denuding the ruins and the rubbish-heaps, and also for the contribution made to the rubbish-heaps by the Neo-Babylonian buildings erected either against or close to the walls of the tower on each of its four sides, buildings of which very little survives as a basis for calculation. Naturally nothing like accuracy could be achieved, but on the most conservative estimate it became clear that for the tower to be buried as it was, at least four meters and probably a good deal more would have to be added to its height as given by the restoration published in 1925. But an addition to the height of the Ziggurat involved a radical change in its plan also, for the upper staircases suggested in Mr. Newton's drawing could not be carried higher without reducing the area on the top stage available for the site of the

temple to impossibly small limits or to nothing. Moreover if Dr. Andrae's suggestion were correct the top stage would have to be remodelled altogether. The whole question of the Ziggurat had to be taken up a second time.

Further, in 1923-24 we were concerned only with the latest phase of the building. Great care therefore had been taken not to destroy any of the existing brickwork, which was for the most part the brickwork of Nabonidus, and no attempt had been made to probe into this and see whether anything of the superstructure of the earlier Ziggurat survived at a lower level. In view of our general program of tracing as fully as possible the history of the Ziggurat site, the time had come to try for further light on the Ziggurat as built by Ur-Engur, even at the cost of damage to the existing monument.

Only a small number of men were employed on the top of the tower, and the later brickwork was cut away only where results essential to the working out of the Third Dynasty plan could reasonably be expected: at the end of the season all the trenches so made were filled in again, both to protect the older remains and to restore the ruins to its normal appearance. A very full photographic record was made of all the Third Dynasty work found, and Mr. Rose's plans and sections record every individual burnt brick of that work. It will be some time before all our data can be assembled and assessed, and reconstructed drawings made of the two Ziggurats; but the data are surprisingly full, and about the Third Dynasty building in particular we learnt very much more than we had ventured to hope.

At either end of the Ziggurat and along its northeast side there were found *in situ* remains of the burnt brick paving of the first terrace, giving therefore the exact height of the lowest stage of the building. On the northeast side, where the three great stairways meet, the original Third Dynasty treads were found, much damaged but recognizable, 2.0 meters under those of the Nabonidus reconstruction. The landing on which they converged was the floor of a square brick gate-tower with (arched?) doorways on all four sides, three of these serving the lower stairways, the back (southwest) door giving on to an upper flight which ran straight up to the second terrace. Mr. Taylor, in the course of his excavations in 1854, which produced the famous cylinders and

led to the identification of the site of Ur, drove a wide trench from the stair landing into the heart of the Ziggurat, cutting right through the upper flight of steps, no easy task, in that they were formed of a solid mass of burnt bricks set in bitumen mortar. Fortunately his trench was not quite central, and one side of the brick mass survived. Its top, with all the treads, had been shaved off flat by Nabonidus's workmen in order the better to lay their own bricks, but the foundations were stepped up apparently *pari passu* with the treads, and so may give us the original inclination of the flight and the height and depth of the individual treads. The stair massif ends against the face of the second stage.

The containing-wall of the second stage was laid bare along the southeast end, both corners being exposed, and was traced at points along the northeast side, at stair-head, and on the northwest end. It was of burnt brick, built with a slight batter, like the walls of the lowest stage, and like them relieved with shallow buttresses; it was standing to a height of 1.35 meters. Behind the wall was a filling of mud bricks of normal Third Dynasty (Ur-Engur) dimensions, 0.23 x 0.15 x 0.07 meter. The wall and the filling presented a perfectly level surface over which lay a layer of reeds, bitumen and matting, and then the unmistakable mud bricks of the Neo-Babylonian restorer. It was clear that the original terrace had been cut down and the brickwork levelled as a foundation for the new work. From the southeast front of the terrace a cutting was made following this level towards the center of the building, and at a distance of 9.0 meters from the front a fresh mass of Third Dynasty mud brickwork was encountered; it had the usual slight batter, rose to a height of 3.0 meters, and had a width of 11.3 meters; we exposed the entire side and the east and south corners. From the description so far given it would naturally be supposed that we had found Ur-Engur's third stage; but the facts were not so easily or so satisfactorily explained. There was here a solid mass of mud brick rising well above the actual level of the second terrace. Below the point of junction there was no distinction between the two constructions, the lines of brick running straight through from one to the other with no break of bond. The slope of the wall-face certainly was consistent with its being a true terrace front, but it must be remembered that in each stage the brickwork throughout the mass presents the same features, the courses being laid

parallel with the sloped face of the burnt brick casing. The face of the brickwork had been rather roughly coated with mud plaster, which again gave it the appearance of an exterior wall, but behind this plaster the bricks were laid in the fashion usually employed by Ur-Engur for filling: that is, two courses of horizontal bricks alternating with four courses of bricks set slantwise on edge in a herring-bone pattern; moreover, of the four courses, two will have the edges of the bricks exposed, but in two the bricks will be at right angles to the rest, so that their flat sides show on the wall face and their purchase in the brick mass is reduced to minimum.⁹ Such a system, though good enough for filling, is out of the question for a wall face where the wall is to retain so formidable a mass as that of the Ziggurat; as it is, the bricks set with their flat faces to the wall front are being pushed out and tend to fall away. It is quite impossible that Ur-Engur's third stage should have been built of mud bricks thus laid and should have lasted until the time of Nabonidus. Yet, in spite of the irregularities of the wall face due to the bulging of the bricks, that face shows no sign of weathering; the plaster has only a single thickness (it has never been repaired) but is intact; and there is no trace of any later casing to preserve the Third Dynasty brickwork. Our work on the Ziggurat has not yet gone so far that I can guarantee an explanation of the seemingly conflicting facts, but I am fairly sure that what we found here was a core from which the facing of burnt brick has been removed. But the value of the discovery remains, for it is tolerably certain that there has been no cutting back of the core (I found by practical experiment that it was impossible to cut back into the standing brickwork and produce so regular a face as this) and that only the burnt brick has been taken away. It is possible that the mud plaster was then applied to disguise the roughness of the core, for piety's sake, during the interval before the new brickwork of the restorers rose up to conceal it, but it may also be an original plaster laid over the core before the burnt brick case was added;¹⁰ in either case we have only to add the normal thickness of a casing wall to get the true ground-plan of Ur-Engur's third terrace.

⁹ The core of the second stage is thus constructed; the same is true of the Eanna Ziggurat of Ur-Engur at Warka, where the burnt brick facing has disappeared and only the mud-brick core survives.

¹⁰ In the Neo-Babylonian work of the top stage we find plaster on the mud brickwork behind the burnt brick.

Of the Third Dynasty Ziggurat, therefore, we have the lowest stage preserved up to its full height, a second stage whose original height can be calculated from the stairway giving access to it, and the outlines of the third stage. Also we have the details of the three great staircases leading up to the first stage together with the ground-plan of the landing gate-tower and the details, including the parapet walls, of the upper flight. Further, on the first terrace, at the southeast end, we have the walls and doorway of a chamber built up against the middle of the wall of the second stage. This is a quite unexpected feature in a Ziggurat, and we cannot explain its purpose, but it is part of the original building of Ur-Engur, and that it was an essential part is shown by the fact that it has several times been repaired by later rulers: the floor has been made good at least twice, and under the pavement bricks of one restoration we found quantities of miniature moon-crescents, boats and so forth, of copper, witness to the sanctity of the chamber.

In several places additions and modifications of the original design prove that the Ziggurat received more attention from later kings than our records hitherto had led us to suppose¹¹ and add to our knowledge of its history; but there is no serious change until Nabonidus undertook his great work of reconstruction. Again we have not yet had time to work over our material and assess its results, but it is clear that the sixth century Ziggurat was very different from that of the twenty-third century; it was much higher, much more bulky, and above the first terrace, which remained unchanged, it bore no relation to its predecessor. Having been exposed for so long to the elements it is not nearly so well preserved as the Third Dynasty construction buried in its core, but the evidence it has yielded should allow of a reconstruction plausible and in the main demonstrably correct.

THE ZIGGURAT TERRACE

The Later Buildings

The terrace at the foot of the Ziggurat had been cleared in the season 1924-25 down to the level of the Third Dynasty, which at that time

¹¹ It was the failure to identify some of these that accounted for mistakes in our first attempt at restoration.

was the limit set to our researches. The remains of walls of that period, as well as those of later date overlying them, had been respected (for plans see *Antiquaries Journal*, v, 4, figures 1, a, b), but had since suffered so much from the weather as to retain little interest. The results of a deep cut made in 1930-31 near the north corner of the Ziggurat, where walls much earlier than the Third Dynasty had been brought to light, justified the removal of the insignificant ruins of the classical period in order to obtain evidence for the earlier stages in the history of the Ziggurat site. Already work done in 1926-27 along the southwest side of the Ziggurat had shown that the late constructions there, down to and including the Temenos Wall of Nebuchadnezzar, were founded on and virtually reproduced the Third Dynasty girdle wall, and that this in its turn was but a reconstruction following on the lines of more ancient work, some of it built with plano-convex bricks and presumably belonging to the First Dynasty. The remains on the northeast side, near the north corner, clearly ought to be examined more thoroughly, but here the area was limited on the one side by the central flight of the Ziggurat stairs and on another by the sunken 'Nannar' court to the northeast. The northwest side therefore, where the classical buildings already excavated might well have had forerunners of the same type, was the most extensive and the most promising field for further work.

Our excavations last winter covered the whole area between the northwest face of the Ziggurat and the Temenos Wall of Nebuchadnezzar and passed round the north corner to join up with the trench cut in the previous season. They dealt primarily with the range of chambers which ran along the edge of Ur-Engur's terrace and then turned at right angles to enclose a court of which the Ziggurat itself formed the third side, with the Nannar sanctuary of Neo-Babylonian times built in the corner between the central and northwest flights of stairs. In the course of the preliminary work of destruction certain additions were made to our knowledge of the historical periods.

Under the Neo-Babylonian Nannar sanctuary no corresponding building of earlier date was found. That the site was unoccupied under the Third Dynasty does not necessarily follow, because there had been a drastic levelling here to make room for the new building, whose founda-



FIGURE 1. COPPER FOUNDATION-CYLINDERS OF NUB-ABAD



FIGURE 2. COPPER FOUNDATION-CYLINDERS IN POSITION IN THEIR BRICK BOX

tions went down almost as deep as any of the Third Dynasty, and if there had been anything here it would have left no trace of itself.

On the northwest side two gate-socket stones of Ur-Engur, found in position, confirmed the existence of two doors conjecturally marked in our earlier plan. A more important discovery was made when the Third Dynasty walls were being removed. Of these walls there seldom survived more than the mud brick foundations. The burnt brick superstructure had disappeared and what burnt brick there was belonged to a later reconstruction the walls of which rested on the stumps of the old. The later work had been published by us as being of Larsa date, an attribution based on the character of the bricks, but its authorship was left in doubt; stamped bricks of several Isin and Larsa rulers had indeed been found loose on the site, but none was in position. Now in the mud brickwork underlying the walls of a large room northeast of the court there came to light two foundation-boxes of burnt brick each containing two copper cylinders inscribed with the name of Nur-Adad of Larsa, about 1970 B.C. [Plate XXXII]. As foundation-deposits these copper cylinders, 0.275-0.33 meter long and 0.065 meter in diameter, are unique; they are of solid metal, completely covered with inscriptions. On three of the cylinders the texts are duplicates of each other and of clay cones published in *Ur Royal Inscriptions* (numbers 112, 124) which are now seen to belong together; the cones came from the same building. The object of the dedication is a great 'cooking-pot' or oven for preparing the food of Nannar and of all the gods worshipped in the temple, that is, on the Ziggurat platform. This is of peculiar interest in view of the discovery that two chambers of the First Dynasty building of which this building of Nur-Adad is a late edition were entirely taken up by great ovens or fireplaces which we had, before the cylinders were read, recognized to be of a ritual character. The discovery, however welcome, was disconcerting at first, for the cylinders and (as shown by their measurements) the bricks of the boxes which contained them were of Larsa date, whereas the wall in which were the boxes could, on the strength of the measurements of its bricks, be assigned only to the Third Dynasty. A closer examination showed that a square hole had been cut from above into the mud brickwork and the burnt bricks of Larsa type-laid around its sides; so far from the

anachronism of the inscriptions upsetting our previous conclusions the paring of the mud bricks—one of which was reduced to a width of scarcely a centimeter—proved them correct.

Another new discovery lay further afield, but as it concerns the plan of the Larsa buildings published in *Antiquaries Journal*, v. page 353, and figure 1 (b) it were best described here. In 1924-25 we found that the mud-brick terrace wall of Ur-Engur had been refaced with a *kisu* or revetment in burnt brick which again we attributed to a Larsa king; projecting from this was a fort with Sally-port which in its present condition was the work of Kuri-Galzu (about 1400 B.C.) but as proved by inscribed cones found in position, had first been built by Warad-Sin of Larsa; the burnt-brick facing contained bricks with the Kuri-Galzu stamp, the mud-brick core we assigned to Warad-Sin. We have now found, what we did not suspect before, that the original Larsa front of the building is remarkably well preserved, masked by the Kassite revetment, and is in itself most remarkable [Plates XXXIII and XXXIV.]

The salient, constructed in mud-brick, is bonded into the burnt brick-work of the terrace revetment, which must therefore have the same authorship. A re-entrant angle in the southwest side has the northwest face decorated with two double-recessed niches of normal type, but the whole length of the main northwest front is made up of a series of large attached half-columns with double recessed niches down their centers; this type of wall, copied later by Kuri-Galzu, now makes its first known appearance in Larsa times. The decorated facade rests on a heavy foundation stepped out in a succession of narrow offsets all of which, probably, were below ground level, so that the widening of the foundation is constructional and not ornamental; two or three straight courses at the top alone seem to have been exposed, and afforded the necessary base for the half-columns. In the center the frontage line was set back for a doorway flanked by two sets of broad reveals, and in the angles between these and the side walls were mud-brick columns in the round. The columns were of moulded bricks, segmental in shape and with the outer face not only rounded to the curve of the shaft but with a further boss in relief such that each set of three bricks (two in the lower and one in the upper course) bore a triangle in low relief; this decoration



FIGURE 1. WARAD-SIN'S FORT: THE GATEWAY RECESS WITH FREE COLUMNS.



FIGURE 2. WARAD-SIN'S FORT: THE EAST CORNER, SHOWING DECORATED WALL FACE AND TWO DEDICATION-CONES IN POSITION.

made of the column a very close imitation of a date-palm trunk, the original from which in Mesopotamia the architectural column was inevitably derived. The columns were slender, with a diameter of only 0.70 meter, and could scarcely have attained any very great height; presumably to counteract the weakness inherent in their girth and material they were tied at intervals into the side walls of the entry by courses of bricks running through. The wall was continued across the doorway, what looked at first sight like a blocking of the passage proving to be bonded into the jambs, and this original barrier rose to a height of 1.60 meters, virtually that of the interior passage-way in Kuri-Galzu's reconstructed fort. It would appear that the Larsa doorway also was at a high level and was reached by some kind of wooden steps normally placed in the door recess but removed in times of danger, and so serving the same purpose as the drawbridge of medieval times. At the west corner of the facade, where a plain buttress framed the decorated wall length, we found definite proof of the authorship of the whole building, and with it of the terrace revetment. On either face of the buttress at a height of 1.85 meters above foundation level there was built into the wall an inscribed clay cone of Warad-Sin (see *Ur Inscriptions*, 131): the stem was embedded in the brickwork, the flat inscribed base was flush with the plaster on the wall face, which had been carefully trimmed so as to leave the clay disc exposed. This discovery of the cones in position made it evident that those found in 1924 (see *Antiquaries Journal*, v, page 356) and then described as being in the mud-brick core behind the burnt-brick face, were really in the face of the mud-brick wall which the later burnt-brickwork merely masked.

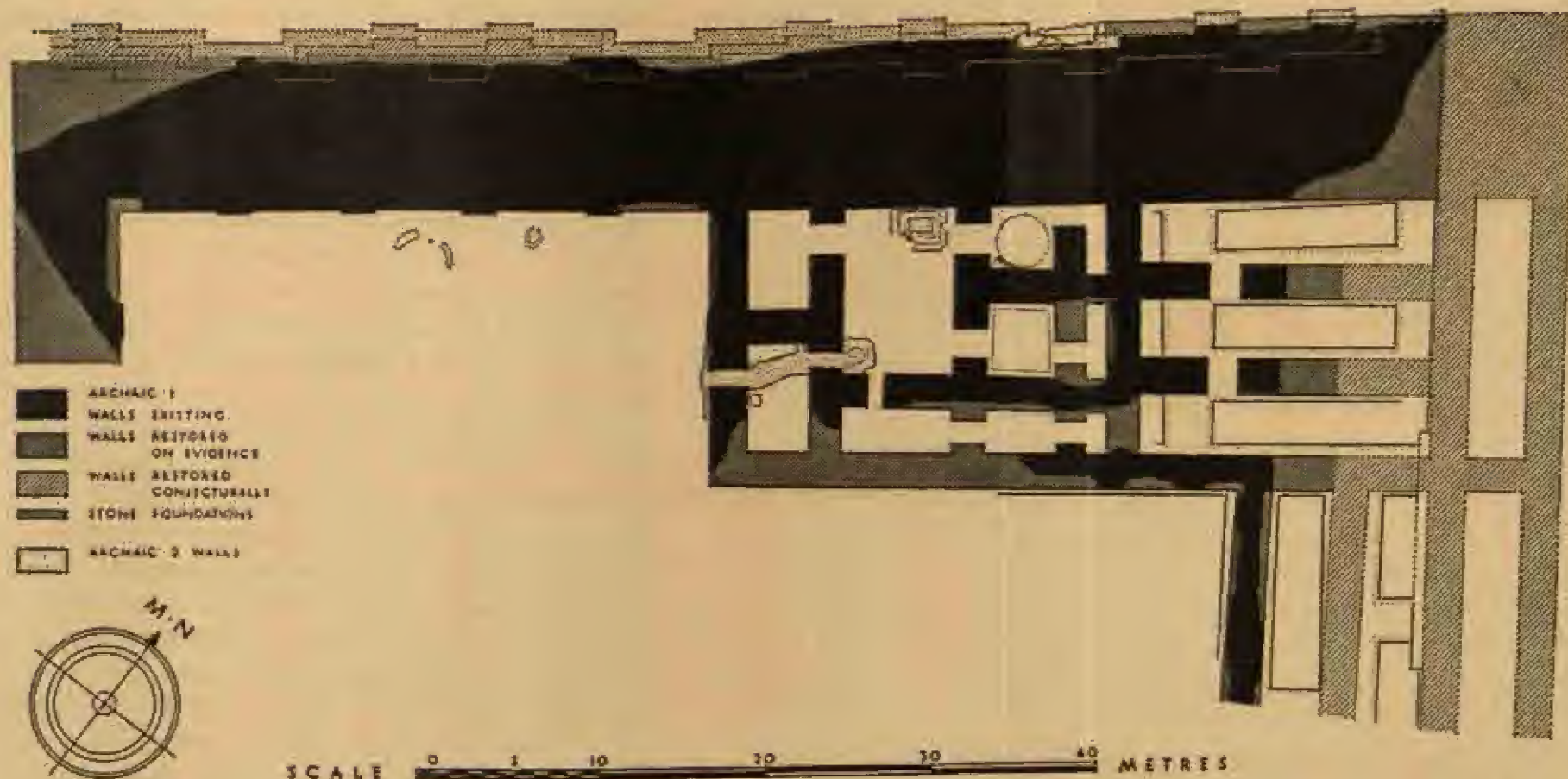
Apart from the topographical interest of this, the most ornate example of Larsa building yet encountered, the fact of its including free columns is of much importance. The common employment of the column in very early Sumerian architecture is now firmly established; we have a good instance of it in the Third Dynasty (*Antiquaries Journal*, x, Plate XXXVI, 6), and now it recurs under the Larsa kings, while Haines, though his account was discredited, claimed to have found a columnar hall of Kassite date at Nippur. At no period therefore in Mesopotamian history can the possibility of the use of the column be discounted.

The Early Buildings

Below the level of the Third Dynasty buildings which occupied the area between the northwest face of the Ziggurat and the terrace wall of Ur-Engur there was found a not very dissimilar range belonging to the period of the First Dynasty of Ur. A very heavy mud-brick wall running along the southwest side of the Ziggurat returned along the northwest side so as to enclose a courtyard between itself and the tower: in the north corner of the court was a building protected by the wall which on this side had a thickness of 11.0 meters. The north corner of the wall had been destroyed, but it seems to have returned and continued in front of the northeast face of the Ziggurat as a compartment wall enclosing two or more, probably three, ranges of long and narrow magazine chambers. The outer wall (see the plan, Plate XXXV) rested on, and on the outside was carried down so as to mask the face of, an earlier wall which will be described later. It served as retaining-wall to a terrace whose floor level was 3.60 meters above that of the ground outside to the northwest; the exterior face was relieved by a succession of long shallow buttresses which seem in their turn to have been relieved each by two small shallow projections; the upper part of the wall face was of mud brick, the foundations or the lower part of the wall proper (it is difficult to say exactly how much was exposed) was of large boulders and quarry-shaped blocks of coarse white limestone [Plate XXXVI, 1]. The core of this unusual construction was the older wall; against the face of that, a revetment of mud bricks had been added and brought to a fairly true face up to the height to which the stones were intended to stand; then the stonework, only one course thick, had been added, with mud mortar to fill the joints, and the mud brick of the upper section of the wall brought forward over the stones: the latter were largely if not wholly hidden by a plaster of stiff clay. The stonework does not seem to have served any very useful constructional purpose, for it is not sufficiently bonded into the brick behind to be a source of strength, and as a 'dry-course' it does not safeguard the inside of the wall; it is however fully in the tradition of the buildings of 'Archaic Level V' at Warka¹² and of the First Dynasty temple at al

¹² Jordan, *Abhandlungen der preussischen Akademie der Wissenschaften*, 1930, IV, page 49.

ZIGCURAT N.W. TERRACE ARCHAIC I



JANUARY 1915

J. CRUIKSHANK ROSS, A.R.I.B.A. MENEST DELT.

‘Ubaid. Only a short length of the stone-work remains, giving the main wall line; the projecting buttresses have been cut away even at the northeast end, and further to the southwest the whole face of the wall has gone. This is due to Ur-Engur’s workmen, who cut back the wall for the construction of his terrace front, the back of which coincides with the frontage of the older work. Towards the northeast end, Ur-Engur’s wall, which is here in its turn cut away by the builders of Warad-Sin’s fort, seems to have made a salient corresponding on a smaller scale to that of Larsa date, with the result that the Third Dynasty builders, working out further afield, left the First Dynasty wall untouched at this point and only shaved off the projections which interfered with their ground plan. So damaged is the First Dynasty wall that our restoration of its buttressed face is necessarily rather conjectural, but the existing evidence and analogy with what went before as well as what came after should make it accurate in the main.

On the northeast front the building had suffered complete destruction. Behind the back wall of the great Court of Nannar as reconstructed by Warad-Sin, a deep trench had been dug (subsequently filled in with rubbish in which were many Larsa bricks) which had cut off all the walls to below foundation level. Here then our plan shows a reconstruction simply based on the older building, ‘Archaic II’, which everywhere else does serve as a prototype for the First Dynasty construction: its extent, however, and the existence of a third range of chambers must remain conjectural.

The building in the north corner of the courtyard enclosed by the First Dynasty terrace wall was, to judge by its ground plan, in the nature of a house rather than a temple. A door in the wall facing on the courtyard led through an entrance-chamber into a central court, off which opened four other rooms, one of which led to a fifth room having a very small square compartment at its far end. The passage from the outside into the inner court was carefully paved with bitumen, the surface cambered and then carried up to the wall face in a skirting effected by bricks being set along the edge by the wall, coated with clay, and the bitumen laid over them. The traffic was so considerable that the flooring had had to be relaid at least twice. In the north corner of the inner court there was a basin of burnt bricks and bitumen, the sides rising above



FIGURE 1



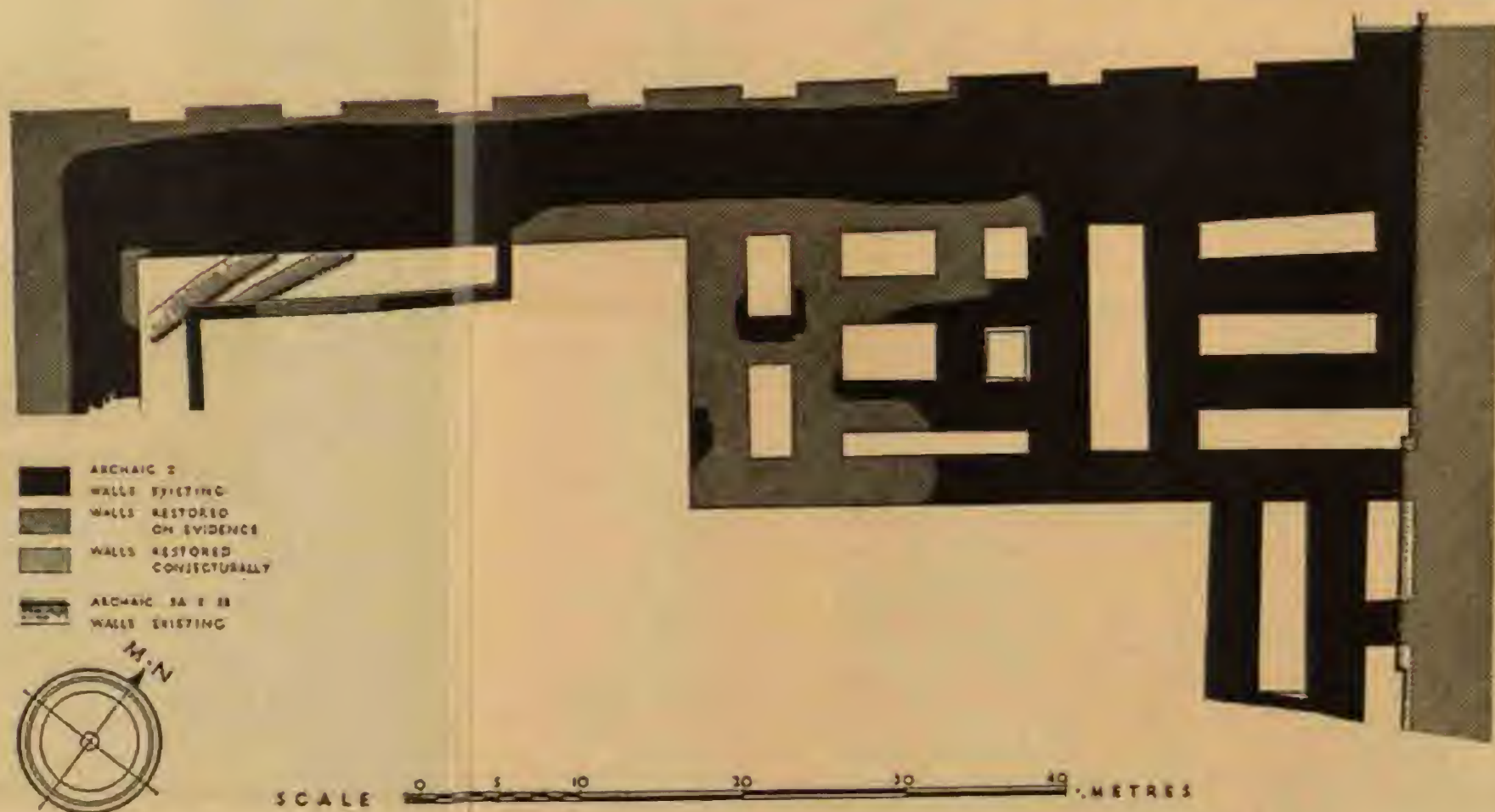
FIGURE 2



FIGURE 3

CALCITE FIGURES FROM THE FIRST DYNASTY BUILDING

ZIGGURAT N.W. TERRACE ARCHAIC 2



JANUARY 1932

J. CRUICKSHANK 6011 A 918A - MINE. IT. DELT

STICURAT M WATERBACE



Approved by the Board of Directors

1900

U. 17834. Figurine of seated calf, the body in profile, the head turned outwards over the shoulder; length 0.035 meter, height 0.03 meter.

U. 17835 A, B. Two lion's heads, silhouetted in profile; extreme diameter 0.045 meter and 0.05 meter. Originally painted red, both pierced for suspension. They are really stamp seals, the lower surface being flat, with a design of animals roughly cut with the drill. [Plate XXXVII, 2.]

U. 17836. Object of white calcite, bell-shaped with double pierced lobe; height 0.063 meter, base diameter 0.052 meter.

U. 17837. White calcite toilet-pot made of two small vases joined together; height 0.022 meter, total length 0.07 meter.

U. 17838. White calcite vase, miniature, height 0.04 meter, rim diameter 0.036 meter.

U. 17839. Copper instrument, possibly a razor, length 0.08 meter.

U. 17840. Copper disc, possibly a mirror, diameter 0.135 meter. To it is attached by corrosion a second example of the 'razor' type of tool like U. 17839.

U. 17841. Figurine of veined calcite in the form of a human being, very summarily treated, height 0.055 meter.

U. 17842. Beads; a mixed lot of carnelian, lapis lazuli, glazed frit, agate, shell, quartzite, crystal, and so forth. Rings, balls, double conoids, barrels, faceted lentoids, tubular, and so forth. 745 in all.

The walls of the First Dynasty building rested for the most part on the stouter walls of an earlier building (Archaic II; see plan, Plate XXXVIII) which also was completely excavated in the course of the season. Here again there was a very heavy outer wall, 9.0 meters thick, enclosing a courtyard and a building in its north corner and returning along the northeast face of the Ziggurat as a compartment-wall containing two ranges of magazine chambers. The outer wall on the northeast side had been destroyed to make room for the southwest boundary of the great Nannar Court, the foundations of which, thanks to the low level at which the court lay, went as deep as those of the predynastic structure, but as regards its character there could be little doubt. This compartment-wall and the solid wall on the northwest served as retaining-walls for a platform raised about 2.0 meters above the ground-level beyond them; the northwest wall had a series of shallow buttresses along its outer face, but the inner face was plain. The height of the platform inside it was clearly shown by the wall face, which had been plastered with mud above while the foundations below the floor were naturally left rough. The walls of the building in the north corner were standing to a maximum height of 4.50 meters, but even so were no more than founda-



FIGURE 1. 'ARCHAISMS I AND II': A, FIRST DYNASTY COURTYARD WALL, INNER FACE; B, INNER FACE OF EARLIER COURTYARD WALL. THE ARROW POINTS TO MOSAIC CONES LYING BELOW THE FOUNDATIONS



FIGURE 2. EARLIEST FLOOR LEVELS OF THE ZIGGURAT TERRACES: A, THE LOWEST FLOOR OF CRUSHED LIME WITH LARGE CONES LYING IN IT; B, FLOOR COVERED WITH SMALL MOSAIC CONES

tions rising scarcely to the floor level of the court. All the chambers had been filled in with a solid packing of mud brick intended as a foundation for the pavement which had disappeared; in consequence, there were no doorways, and the ground-plan was less illuminating than it would otherwise have been; no objects were found in the rooms. A later phase in the history of the building was denoted by a wall in the courtyard running parallel with the outer wall. Its front was sloped with the batter normal in a retaining-wall and behind it was earth packing overlaid by a floor of mud brick two courses thick. It formed a terrace or platform 1.20 meters high which had been built over the original floor perhaps as the base for an altar or small independent building; a passage was left between it and the outer wall, but was blocked at the northeast end by mud brickwork abutting on the old enciente.

All the walls, both those of the chambers and the containing-walls of the original building, were remarkable in that they were built with a mixture of plano-convex and square bricks. The plano-convex bricks measured 0.20-0.19 x 0.13 meter with a maximum thickness of 0.06 meter, the square bricks were of different sizes, measuring respectively 0.37 x 0.23 x 0.11-0.10 meter, 0.35-0.34 x 0.23 x 0.10 meter and 0.22-0.20 x 0.13 x 0.085 meter. That all were strictly contemporary was shown by the fact that instead of the plano-convex bricks being above and the flat bricks below them, as would have been the case had the wall been of two periods, there were alternating courses of bricks of the different types [Plate XXXIX. 1]: the small plano-convex bricks were sometimes laid flat, more often herring-bone fashion; the square bricks were always flat-laid. It follows that the structure dates from the period of transition between Jemdet Nasr and the 'plano-convex' age, which we now know to have been of very long duration; it is hazardous to risk giving actual figures, but presumably our Archaic II belongs somewhere about 3600 B.C. It is curious that here, as in more or less contemporary buildings at Warka, fragments of al 'Ubaid pottery occur fairly plentifully in the mud of the bricks and very freely indeed in the mortar between them. This is true both of the walls and of the filling of the chambers, which consists of plano-convex bricks only laid in courses with very little mortar.

The Archaic II building clearly served as a pattern for that of the First Dynasty, and this again was copied, at least in its main lines, by

Ur-Engur and by later historic kings. The similarity of ground-plan must connote a similarity of purpose, and since the historic buildings are definitely the surroundings of the Ziggurat, we may fairly conclude that both in the First Dynasty and at the beginning of the 'plano-convex' period there was a Ziggurat corresponding to the buildings we have found and occupying the same site as that of Ur-Engur. Conditions are then the same at Ur as at Warka, where Ur-Engur's Ziggurat is built round and over the ruins of similar towers of earlier date which serve as its core. Although at Ur it would be inadvisable to confirm this by excavations which would undermine and involve damage to and perhaps the destruction of the finest monument of its kind existing in Iraq, confirmation is hardly necessary and the fact of former Ziggurats having existed can safely be assumed on the strength of the evidence now to hand.

That there were yet earlier Ziggurats is at least probable. In the west corner of the courtyard of Archaic II and beneath the foundations of its containing-wall there was found a terrace front differently aligned and built of the small bricks called by the German excavators at Warka 'Riemchen'; it had later been refaced or reinforced by the addition of a revetment built with mud bricks of the same type (measurements, 0.23 x 0.10 x 0.10 meter). Nor was this all. Excavations in the courtyard to the east of this early terrace edge produced a floor level of clay over which were thickly strewn clay cones from a mosaic wall-decoration. That they were older than our Archaic II was shown by the fact that the cone stratum ran under the foundations of the upper terrace wall (Archaic II h.) and had been cut away by the foundations of the great containing-wall. The cones, coloured red and black and creamy white, were of two sizes, most being of the small slender sort measuring on an average 0.09-0.08 meter in length with a diameter of 0.015 meter, while some were 0.13 meter long and had a diameter of 0.03 meter with a slight depression in the blunt end. These two types are found *in situ* in the same wall-face at Warka decorating a building which the excavators date as not later than the close of the fifth millennium B.C., a building which is constructed with mud 'Riemchen'. Here the cones may well be brought into relation with the later revetment of the transverse wall, and probably belonged to buildings standing on the terrace which that wall contained [Plate XXXIX, 2].

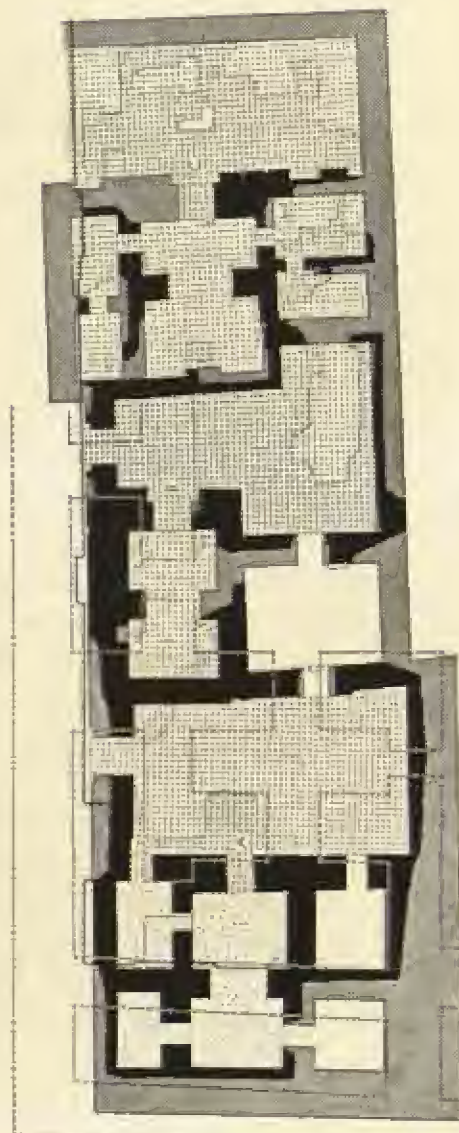
At a depth of 0.30 to 0.65 meter below the clay floor on which the cones were lying, there was a second floor-level consisting of clay and crushed limestone on which lay more clay cones but of a different sort. They were of an average length of 0.18 meter, 0.07 meter in diameter and deeply hollowed at the end so that when set in the wall face they would give the effect of a disc of black shadow surrounded by a ring of light clay colour. Such large cones have been found (*not in situ*) at Warka at levels below those in which the smaller cones occur, so that the dating evidence from the two sites agrees; they would seem to belong to a stage of development between the slender mosaic cone and the clay vases which similarly decorated the face of the primitive mud Ziggurat of Eanna at Warka.²⁵ The stratum with the large cones is probably to be equated with the older transverse wall and the cones must come from the earliest building yet known to us on the Ziggurat site; it is of course possible that, like the Warka vases, they were the decoration of the first Ziggurat itself.

The investigation of the early surrounding of the Ziggurat led us somewhat further afield than had been at first intended. It was important to locate exactly the west corner of the enclosure, which at a late period was represented by a small fort forming a salient from the general line of Nebuchadnezzar's Temenos Wall but lying for the most part inside it: it was difficult to explain why Nebuchadnezzar had chosen this particular line—well outside that of the Third Dynasty and Kassite terrace—unless there was some earlier structure whose site he wished to include in his Sacred Area. Accordingly, work was started inside the precincts of the Neo-Babylonian fort.

The southwest chamber of the fort was found to be occupied by a large shallow pit lined with mats which had been used as a mixing-bowl for bitumen, probably that employed as mortar in the reconstruction of the Ziggurat by Nabonîdus. Below this there came to light a building with paved floors the outer walls of which (on the northwest and southwest) lay immediately under those of the fort. The building (see plan, Plate XL) was a small shrine opening on a courtyard to the northeast

²⁵I am aware that Dr. Jordan regards these vases as serving a constructional and not an ornamental purpose, but to me the intention of the original builders seems certainly to have been decoration.

N. C. F. AND X. N. C. F. SITES: LEVEL 2 B I S



NEW TERRACE OF CIRCUMBAT

SCALE OF WALLS
TIME OF WALL



UNIVERSITY OF CHICAGO

1911

of it, and the entrance to the court was from the northwest, that is from the side opposite to the Ziggurat; the shrine therefore, the floor of which was at a level rather lower than the top of the Ziggurat terrace, had no communication with it. As work progressed further to the northeast it was found that this shrine was one of a number of which three were preserved to the extent that their ground-plans could be recovered in detail; all were more or less of the same pattern, showing a court to the northeast on to which gave two-roomed sanctuaries, either simple or flanked by side chambers. Unfortunately there were no inscriptions to identify their authors or the deities to which they were consecrated. What was clear, however, was that shortly before Nebuchadnezzar's time there was a row of shrines occupying a lower platform of the Ziggurat. Some time after they had been built, a heavy mud-brick wall had been erected along the edge of this lower platform, cutting off the approaches from that side and slightly curtailing the size of the buildings. To judge by the type of bricks employed, the wall might have been the work of the Assyrian governor Sinbalatsu-iqbi, and the shrines should in that case date to the eighth century B.C.

Further work proved that these buildings were but reconstructions of something older. The forerunners of the two chapels to the northeast had been completely ruined; enough remained to show that they had existed, but not enough to give their character. The southwest chapel, however, incorporated a great deal of the older building of which it was a simplified copy. In this underlying structure (see plan, 'Level 2', Figure 3) the facade of the shrine facing the court was of burnt brick and was decorated with double niches; immediately in front of the doorway was a brick altar, and in the east corner of the court there was, against the southeast wall, a double niche containing a raised base, and another altar in front of it. A door awkwardly contrived in the south corner gave access to a very narrow passage which may have contained a staircase (the southwest end where the stairs should have been was ruined away) and corresponding to this there was a long narrow chamber in the west corner of the building, entered from a forecourt whose walls had for the most part disappeared; the brick pavement served to define its limits, and a curved line of paving-bricks denoted the position of the

outer door. Here again there were no inscriptions to identify the builder and establish the date of the building.

The irregularities in the pavement of the court clearly showed that there were more ruins to be discovered beneath it [Plate XII. 1, 2]. They proved to be those of two small two-chambered shrines set side by side (see plan, 'Level 3', Figure 4) perhaps again belonging to a

N - C - F - S I T E L E V E L 2

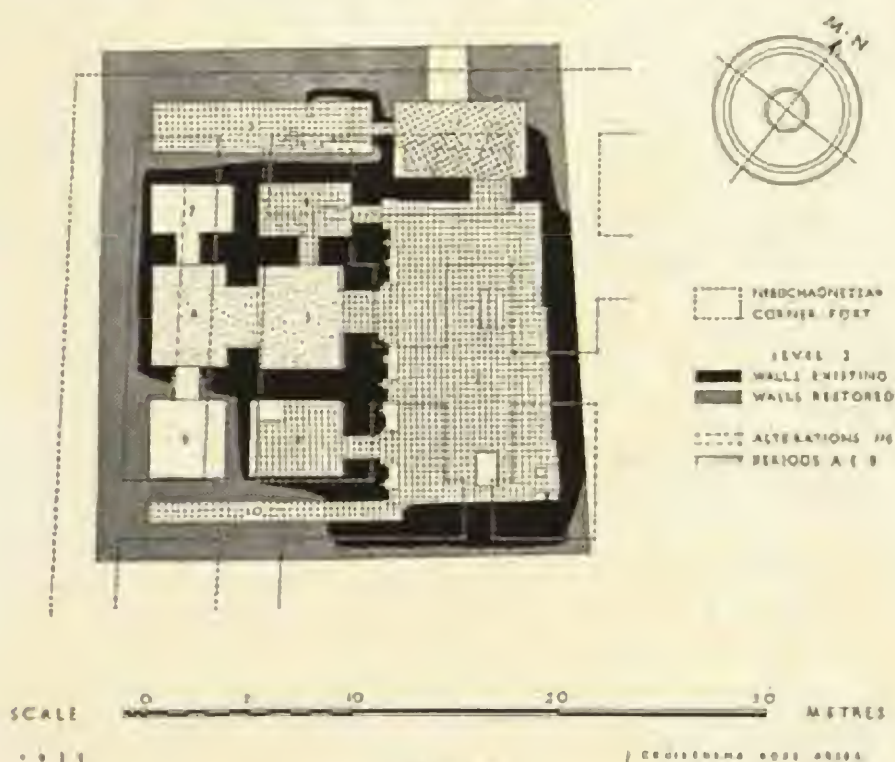
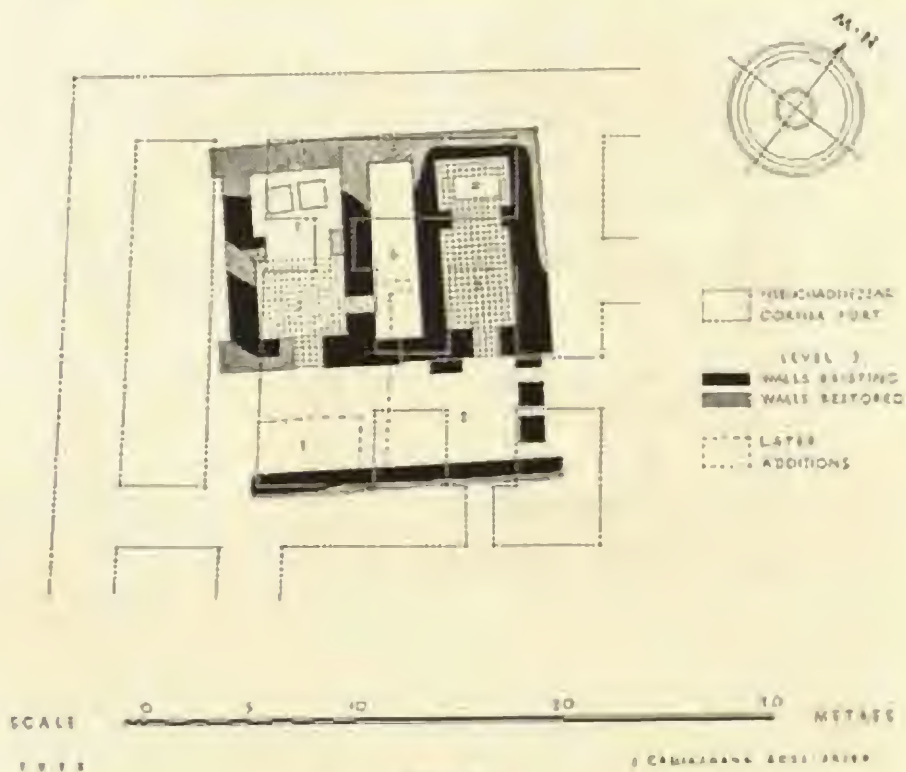


FIGURE 3.

series of similar shrines, but of others no remains survived. These were oriented otherwise than the shrines of 'Level 2' and 'Level 2 B', the entrances being on the southeast and opening on to a lane which ran along the foot of the upper terrace of the Ziggurat; the facing of burnt brick added to the terrace by Kuri-Galzu had fallen into ruin and much of the brickwork had been carried off as a building material before the shrines of 'Level 3' were set up.

The two little shrines were of much the same pattern. In one the inner room or sanctuary is almost entirely taken up by a large brick base, in the other there are two brick bases again almost filling the room. The walls were of burnt brick, the floors had been of clay laid over brick rubble; flanking the outer door of one, there were two rectangular brick bases, and two more seemed almost to block the northeast end of the lane

N · C · F · S I T E L E V E L 3



just beyond the shrine door. The construction was poor, and much of the outer (southeast) wall had fallen forwards into the lane in masses whose bricks still adhered together; in two places carefully squared stone slabs had been substituted for bricks. Against the middle door of the northeast building the door-socket stone was found in place, but it was uninscribed. Again the bricks bore no inscription, and measurements told nothing, for the walls contained a medley of bricks of all periods down



FIGURE 1. THE NEO-BABYLONIAN CHAPELS (SITE N C F): PAVEMENT OF LEVEL II



FIGURE 2. SITE N C F: PAVEMENT OF LEVEL II REMOVED TO OUTER WALLS AND PAVEMENT OF LEVEL III

to the Kassite; a fragment of limestone with an inscription of Kuri-Galzu found lying by the communicating door of the northeast shrine certainly did not belong there. A curious discovery was made in the sanctuary of this building; partly under the pavement and partly in the thickness of the northeast wall was a collection of clay models of plano-convex bricks (usually with a symbol incised on one side) square bricks and mixing-bowls for bitumen. This reverence for the primitive brick type is paralleled by the custom in Neo-Babylonian times of enclosing the *papsugal* figures buried beneath house-floors in boxes made of plano-convex bricks: it was perhaps for the same reason that in 'Level 2 B' the floor of the courtyard of the northeast chapel was paved with plano-convex bricks and with bricks of Dungi.

In the lane, against the shrine wall, was found the coarsely-carved head in white limestone illustrated on Plate XLV, 1. A more remarkable discovery made at the same level was that of the granite stele shown on Plate XLII, 1. The stone is 0.25 meter in height and is a very hard coarse-grained red, black and white granite; no cutting tools have been used on it (presumably the stone was too hard) but the relief has been produced by rubbing or grinding with sand or emery. On the front is the seated figure of a god behind whom is an attendant standing with a staff or fly-whisk; on the narrow edges are two standing attendants and on the back is an inscription in large straggling characters of which the middle has been intentionally defaced. What survives of the text gives us the names of Ur-Nina and of his grandfather; his father's name and that of Lagash have been hammered out. Various monuments found in past seasons have borne witness to a Lagashite domination at Ur; this stela would lend support to the view that such domination began with a victory of Ur-Nina, and it is perhaps to him that we must attribute the overthrow of the Second Dynasty of Ur.

In all our excavations at Ur there has been hitherto an almost complete blank in the record of building construction between Kuri-Galzu in the fourteenth century B.C. and Sinbalatsu-iqbi in the seventh; fragments of brick paving by Adad-aplu-iddi-nam (about 1050 B.C.) in front of the Ziggurat and in the great court of Nannar were the sole exception to the rule. The interest of these unfortunately nameless ruins on the lower terrace of the Ziggurat consists largely in this, that they serve to



FIGURE 1. GRANITE STELA OF UR-NINA, FROM A SQUEEZE



FIGURE 2. SUMERIAN GAMING-BOARD

fill up that gap and show that work, and even original work, at least on a small scale, was carried out on the sacred sites of Ur during those seven centuries; the three buildings may well have had each a life of two hundred years, and considerably less than that is required if we allow a reasonable lifetime to the great Kuri-Galzu range which must next be described.

The buildings which occupy our next level ('Level 4', see plan, Plate XLIII) were contemporary in their foundation with the revetment added by Kuri-Galzu to the Ziggurat terrace front; this was proved by the lane running between them, part of whose brick paving was preserved and came right up against either wall and in each case against the third course of bricks from its foundation. The original building had undergone at least two phases of reconstruction and had seen a corresponding rise in ground level,¹⁴ and with this rise there had gone one rather radical change. Kuri-Galzu's building stood upon a low terrace the edge of which, on the northwest, was revetted with burnt brick; in time this casing fell away, and when the building was repaired for the second time only a sloping bank smoothly plastered with clay led down to the low level of the residential quarter beyond the confines of the Ziggurat complex. Nearly all the northwest wall of the building has fallen away down this bank or has been destroyed by the foundations of later structures (at least this is true so far as our work has yet gone) and is shown on the plan as restored, but the restoration admits of little doubt and the general character of the building of none. Separated by a fairly wide lane, once brick-paved, from the buttressed front of the upper terrace of the Ziggurat there is a long range of buildings consisting of a central corridor with occasional cross doors and on either side of this and communicating with it a series of magazines. The corridor was paved, the magazines sometimes paved, sometimes floored with clay over brick rubble; there was only a single door on to the lane (and this was subsequently bricked up) and, owing to the destruction of the walls at the southwest end, no entrance was found such as one would expect at the end of the corridor. At the northeast, the building came to an end on a line corresponding to that of the southwest jamb of the entrance door

¹⁴For the most part the new work was superimposed on the old with at most a slight overlap; additions to the original design are shown in the plan in outline only.

to Kuri-Galzu's fort¹³; by omitting the end chambers on the inside of the corridor, the magazine building was made to follow the outline of the fort salient; the unity of the scheme is obvious. The probable reconstruction of the magazines is given by the section on Plate XLIII; the store rooms would probably have flat roofs sloping slightly outwards for drainage and the roof of the corridor would be raised so as to admit light by clerestory windows, the roof sloping either to one side or, less probably, to both from a central ridge; none of the walls is thick enough to support brick vaults. At Babylon the store-houses attached to the Ziggurat formed quadrangular enclosures below the terrace; the range of chambers on the lower terrace at Ur are clearly magazines and must correspond to those at Babylon.

When these buildings were found, the season was so far spent that no attempt was made to go below them and discover whether they followed an earlier model; but during the last days of work there did come to light, in front of the fort salient, splendid walls of the Larsa period, standing as much as 3.50 meters high; there was no time to excavate properly these important remains, which must be related to Warad-Sin's mud-brick fort.

The discovery of the lower terrace adds much to our picture of the Ziggurat. Separated from the houses of the town by an open space, which at the point where we have dug is no less than 11.0 meters wide, Kuri-Galzu's terrace—3.25 meters high—was carried up by the blank walls of the magazines built on its edge, and would give the appearance of a massive rampart shutting off the sacred area from the domestic quarter. Above the roof of the storerooms would be seen the higher buildings of the upper terrace whose walls again would make an inner line of defence, and the towering mass of the Ziggurat would dominate the whole; this isolation of the great monument, unsuspected hitherto, must have vastly increased its effect.

From the terrace edge of Kuri-Galzu a trench was cut running out to the northwest almost as far as the inner face of the town wall, and was enlarged into a regular excavation covering the area of a number of houses. Further to the southwest a similar trench was started but

¹³ The fort, which enclosed that of Warad-Sin, probably served as a gateway to the Ziggurat terrace and corresponded to E-dublat-makh on its other side.

abandoned at an earlier stage. Between these two trenches the ground surface had been considerably denuded, but the trenches themselves crossed higher ground; in the uppermost levels there were found remains of the latest period in the city's history, ruins of private houses of the Persian age, and below their foundations the graves of the occupants of the houses. The house-remains were scanty, scarcely ever sufficient to yield intelligible ground-plans, but it was clear that for the most part the buildings reproduced with minor alterations the houses of an earlier date whose walls were standing at a lower level. They produced no objects of importance, but the graves did yield a certain number of glazed vases, heads and seals. One clay coffin found in the low ground between the trenches, flush with the modern surface, proved very interesting. It had been plundered, and only a few fragments of bones and no clay or other vessels or heads were left in it, but at the bottom of the coffin there was a collection of nearly two hundred seal-impressions on clay. That these were really a collection was evident, for the lumps of soft clay had been pressed against the gems (the finger-marks were plain on the back and there was no hole through which a string could have passed) and had afterwards been baked so as to make the record permanent; they were illustrations of the specimens in a collector's cabinet. And the collection was remarkably varied, as can be seen from the small selection shown on Plate XLV, 2. Greek, Egyptian, Babylonian, Assyrian and Persian pieces are easily recognizable; some are perhaps of Phoenician workmanship, and a few seem by their style to anticipate the beginnings of Sasanian art. An impression from a cast¹⁰ from a coin of Athens of about 450 B.C. gives at any rate a *terminus post quem* for the date at which the collection was formed. At Ur very few remains have been found of this period, which must have seen the final decay and desertion of the city (our latest dated tablet is of the twelfth year of Alexander the Great). It is remarkable that this isolated dis-

¹⁰ The impression is considerably smaller than the original coin. Probably this is due to a clay mould having been made from the coin and a new positive cast from this; the present clay impression is from the cast. The repeated shrinkage of the clay in drying would account for the small size of our impression. In the Calene phialae decorated with central medallions taken from coins the shrinkage is approximately the same, owing to the die having been of clay as well as the vessel itself. For the casting of impressions from silver coins, compare G. F. Hill in *Hermes*, volume xxxvi, page 317. Probably in this case a cast (in gold?) was taken from the coin to make the head of a finger-ring; this would account for the presence of the apparent coin-impression in a collection of impressions from gems.



FIGURE 1. SITE N C F, LEVEL IV: A, WABAD-SIN'S TERRACE FRONT; B, KURI-GALZU'S REVETMENT; ON THE LEFT, THE MAGAZINE BUILDINGS OF KURI-GALZU



FIGURE 2. SITE N C F, LEVEL IV: KURI-GALZU'S MAGAZINE BUILDING—THE CORRIDOR LOOKING SOUTHWEST



FIGURE 1. LIMESTONE HEAD OF KASSITE DEITY



FIGURE 2. EXAMPLES OF SEAL-IMPRESSIONS FROM THE PERSIAN COLLECTION

covery should so well illustrate the various artistic influences which were brought to bear on the Mesopotamian valley under the cosmopolitan rule of the Persians and the Macedonians.

Excavations were carried down only to a strictly limited depth so as to bring to light the fairly well preserved houses of the second level. They were of Neo-Babylonian or late Kassite date. In this part of the residential town we have again the narrow winding lanes and huddled houses familiar in that section of the Larsa city excavated southeast of the Temenos, but the lanes are still narrower and the house-plans are more irregular than in the earlier period, none of the buildings seems to have had an upper story, and the actual construction is generally poor. If in spite of their flimsy character the houses were long-lived, the walls often repaired and altered, the floors constantly raised, we can only see in the fact evidence for the poverty of the age. While it would be rash to argue too much from the results of a very limited area of excavation, the obvious theory of Ur's decadence does seem to be supported by what can be observed here. The houses themselves produced no objects of interest. The graves beneath them contained a certain amount of glazed pottery and a few good beads—carnelian, amethyst and chalcedony—and an occasional small gold ear-ring or finger-ring of silver with engraved bezel: but the outstanding discovery was made not here but in the trial trench further to the southwest. Here, in the ruins of a house which, judging from its being immediately below the modern surface, must have been of Persian date, in a thick bed of ashes and burnt earth resulting from the building's destruction by fire, four objects were found lying close together and evidently thrown away at the same time. One was a rectangular slab of dark steatite, perfectly plain; the second a handled mug carved out of a block of steatite, somewhat irregular in shape, not decorated, and difficult to date. The third object was also of steatite, a flat stone shaped rather like the sole of a boot 0.13 meter long [Plate XLII. 2] on the upper surface of which are holes and rosettes; at the 'heel' end there had been figures carved in the round of which only the feet remain, minute figures of a man and two bulls, very finely carved. As Mr. C. J. Gadd pointed out to me, it is a gaming-board of a type known in Egypt at an earlier date (the best example is that found by the late Lord Carnarvon at Thebes and now in the Metro-



STAMNE BOWL. (1/1)

politan Museum, New York) and introduced (or re-introduced?) into Babylonia by Esarhaddon; fragments of similar boards from Nineveh are now in the British Museum, but this is the first nearly complete example.

The fourth object was a bowl or cup of dark grey steatite [Plate XLVI], measuring 0.135 meter across the rim, the sides of which are decorated with five figures of oxen carved in relief, the bodies and legs in profile and rendered in low relief, the heads turned outwards over the shoulder and projecting so far that only the horns are attached to the background. A large triangular break has removed the head of one of the oxen, and there is another chip out of the rim which has not injured the decoration; otherwise the vessel is complete, and the surface is absolutely undamaged. The animals are shown as almost stationary, with all their hoofs set on the ground and the legs scarcely flexed; over the back of each is a large ear of barley. In the written language the sign for barley is combined with that for cattle to give the meaning 'fat oxen'; that may be the case here, or the two representations may be independent and symbolize the agriculture and the stock-breeding which formed the wealth of the country. The style is astonishingly good, and from an artistic point of view the bowl must rank as the finest known example of a *genre* which at one time was very popular with the Sumerians and is to-day represented by the dragon-cup of Gudea in the Louvre and by a good many fragments elsewhere. The date is certainly between the twenty-fourth and the twenty-second centuries B.C., that is, the bowl belongs either to the time of Gudea or to that of the Third Dynasty of Ur; how it came to be in the ruins of a house of the Persian period we cannot say.

THE POTTERY OF TELL BILLA

A Preliminary Account¹

By E. A. SPEISER

IN October, 1930, the joint Assyrian expedition of the University Museum and the American Schools of Oriental Research began excavations at Tell Billa;² the mound is situated about fifteen miles northeast of Mosul and one mile south of Bashiqa, in northern Iraq. A factor in the organization of the expedition was the archaeological surveying tour which the writer had made in the season of 1926-27.³ In the course of that trip many northern mounds were examined, the surface finds disclosing abundant traces of early occupations. Tell Billa and Tepe Gawra were visited in April, 1927, and a careful examination of the surface sherds led to the conclusion that these two neighboring sites—Gawra lies eight miles west of Billa—should throw much light on the pre-Assyrian civilizations north of Nineveh. The opportunity of adding to our knowledge of Assyria prior to the first millenium appealed greatly to the two sponsoring institutions and thus the joint expedition was soon placed in the field.⁴

The results of our first two seasons have amply justified our expectations. Billa and Gawra have jointly furnished us with extensive and clearly stratified sources for the study of more than four millennia of north-Mesopotamian history; for our data begin with the neolithic age and extend down to the Hellenistic period. Of the two mounds Gawra is by far the older site. The occupation of Billa did not begin until

¹ The following abbreviations have been employed in the footnotes:

AASOR—*Annals of the American Schools of Oriental Research*.

BASOR—*Bulletin of the American Schools of Oriental Research*.

CPP—J. C. Duncan, *Corpus of Palestinian Pottery*, London, 1930.

FAS—H. Frankfort, *Archaeology and the Sumerian Problem*, Chicago, 1932.

FSEP—H. Frankfort, *Studies in the Early Pottery of the Near East*, I-II, London, 1924.

Other references are given in full. Since it was necessary to limit the number and size of the footnotes, the citations refer generally to those works where the material is most conveniently available.

² Compare *BASOR*, numbers 40 and following.

³ See *AASOR*, VIII (1928), and IX (1929).

⁴ Dropsie College of Philadelphia, which had defrayed the expenses of the above-mentioned archaeological tour, joined in the excavations at Tepe Gawra in January, 1931.

Gawra had been covered by fourteen meters of occupational débris, representing a long succession of levels. From about 3000 n. c. to the middle of the second millennium the two mounds show a virtually parallel course of development. By the end of that period Gawra had grown too tall and narrow to be of much practical value; thereafter Billa took up the burden and its occupations continued for another millennium and a half.

With the present article begins a series of presentations of the results that have been obtained at Billa thus far. The account is a preliminary one because a complete statement of the facts must await the total clearing of a given stratum, or number of strata. In the case of Billa such a happy state cannot be reached for a number of years. The site has an area of thirty-eight acres and it must therefore be dug in sections. Up to the conclusion of the second campaign (February, 1932) two civilizations had been studied over a larger area: the Assyrian, which is represented by strata 1 and 2, and the Hurrian, which occupies stratum 3 and its subdivisions. In the northeastern section of Billa no remains were found above the Hurrian stratum, since the Assyrian settlements were built farther inwards, away from the eastern slope. That section offered thus an excellent opportunity for following the stratification of the mound down to virgin soil. This plan was carried out as part of our work at Billa during our first season, the area being necessarily limited to the square G27 (see Plate XLVII) and parts of the adjoining squares. In our second campaign the square H27 was added to our vertical cut. In this manner material from four additional levels was obtained (strata 4-7); stratum 7 proved to repose directly on virgin soil. Levels 3, 4 and 5 had their substrata, but they need not be considered at present, especially since evidence obtained near the slope of a mound is not sufficient for the establishment of minute subdivisions. In addition to the finds from our seven main strata, numerous objects of the post-Assyrian age were recovered in other portions of the site. They all came from tombs that were intrusive in the Assyrian strata, and not from definite occupational layers. For this reason we feel justified in grouping all such finds under the head of the 'post-Assyrian' period even though they represent several cultural sequences. The late townships, which literally covered the sur-

face of Billa with their cemeteries, all centered in the northwestern section of the mound, which is consequently a number of meters higher than the rest of the site. When this part has been dug and its stratification definitely established the tomb material will be placed in its proper order; the stratum designations *a*, *b* and so on, have been reserved for that purpose.

No special apology is needed for letting pottery head this series. Ceramic material is still our most trustworthy and articulate guide through ancient civilizations, especially where the epigraphical sources are incomplete, as happens to be the case with Billa. Separate accounts of the metal objects, the terra-cottas, seals, inscriptions, and the architectural data, will follow later. The pottery types published with this article are selections from a considerably larger body of available material. Lack of space has made it necessary to include only the most characteristic specimens of each period, leaving for a final publication the impressive number of intermediate types. In the arrangement of the plates it seemed most practical to present the material according to strata rather than to stress the continuity of the individual shapes. Several types had to be grouped together in some instances, since they could not each command a separate plate; but the advantage of not breaking up well-defined and homogeneous periods outweighed all other considerations.

The drawings from which the tracings for the appended plates were made are the work of several of my collaborators. Dr. C. S. Fisher, Dr. A. Saarisalo, Dr. C. Gordon, Mr. A. H. Detweiler, Mr. P. Beidler, Mr. S. P. Sherman, Mr. B. Mintzker, and Mrs. A. Saarisalo have all contributed to the corpus of Billa pottery. All the drawings selected for this publication have been carefully checked. The task of making the required tracings and reductions fell to Miss Dorothy Cross, who also contributed a number of new drawings. In addition she prepared and arranged the Hurrian motives given on Plate LXIV. Having made a special study of the development of ceramic shapes at Billa and at Gawra, which is soon to be published, she was able to contribute many valuable suggestions. I wish to express to Miss Cross my particular indebtedness for her unfailing interest in this work.

DESCRIPTION OF THE CERAMIC FABRICS

a. Stratum 7 [Plates XLVIII–XLIX; LXIX]

The pottery of this period is mechanically turned as a rule, but hand-made specimens are not uncommon in finer as well as in coarse pieces [Plate XLVIII, 2, 4, 5]. The shapes include simple cups and bowls; larger pots are occasionally equipped with ledge handles. The characteristic shape, however, is the chalice in which a cup or a bowl has been combined with a pedestaled base [Plates XLVIII; XLIX, 3]. In large chalices the pedestal has the shape of a column with censer-like openings. The ware is generally buff or brown, sometimes grey. The plain specimens are nearly always wet-smoothed (finished with a wash). The decorated pieces have slips in various shades of cream, more rarely in yellow and red.

Painted ornamentation is very common, especially on the chalices. The usual color is a deep purplish-brown often shading into black; red is less prominent. Chemical analysis has shown that the pigments are merely clays with varying iron oxide content;² the red color is due to a conversion of the total iron into ferric oxide, while the darker pigments were obtained under conditions that were favorable for the conversion of the iron into magnetic oxide, owing probably to the presence of reducing gases. The firing temperature was in the neighborhood of 1600° Fahrenheit.

The decoration is strictly monochrome. Banded and paneled (metope) arrangements are frequently employed. The designs include rows of triangles with the apex of one pointing towards the base of the next one; cross-hatched geometric figures and concentric ellipsoids; herringbones and saw-tooth patterns; stylized trees and checker fields. Of the natural objects rows of birds, in silhouette, are most frequently portrayed. The disposition of the motives is tectonic, being in definite relation to the shape of the vessel (for illustrations see Plates XLVIII and LXIX).

Culturally there is an intimate relationship between this stratum and the following one. But there are also notable differences, as will be presently indicated.

² Compare the tables at the end of this account.

b. Stratum 6 [Plates L-LIII; LXX; LXXI]

One of the distinguishing features of this period is the technical excellence of its ceramic products. In the more elaborate pieces, such as chalices, the firing temperature is raised to about 2000°, and this advance may be perhaps attributed to an increasing acquaintance on the part of our chalcolithic craftsmen with the art of handling copper. In general the clay is finely levigated. The ware is now predominantly grey, with a bluish or greenish tinge to it, otherwise buff. The older shapes are continued, but they are almost invariably more elaborate. Chalices are still very much in fashion, and the numerous variations in the forms of their pedestals [Plates L; LIII, 3] reflect the mannerisms of the new age. Graceful cups, which taper to a point at the base, are frequently encountered [Plate LII, 1-8]. A common occurrence among the funerary wares is a squat pot with sharply marked shoulder and overhanging rim [Plate LIII, 4, 6]; curiously enough, the smaller specimens of this type were used in burials as covers for the larger ones. Ordinary vessels, such as cooking pots and storage jars, had their special lids, which display a variety of handles. The cooking pots, some of which were burnished, had lug handles; the storage jars were equipped with peg-shaped handles which had a hole near the body of the pot and a notch at the end. Many of the medium-sized cups were also supplied with handles, two or four, which were knob-shaped and vertically pierced [Plate LXX, bottom row]. The bowls [Plate LI] are often carinated; others have out-bulging bases.

Ornamentation is frequent, though painted designs are rare; they were all but driven out by the new styles which specialized in relief and incised decoration and in molding with incision. Though exclusively geometric, the designs are appreciably varied. They include circles, plain and notched bands, zigzags, herringbones, and lattice fields, rope and knob patterns, all in a variety of combinations. Paneled arrangement is as much in vogue as it was in the preceding stratum (compare Plates LXX; LXXI). It is clear that the people of Billa 6 were in many respects the heirs of 7; in others they proved to be gifted innovators. That influences from the outside were not totally lacking will be shown in the next chapter, where the significance and the connections of the

Billa pottery will be made the subject of a brief discussion. In the meantime, however, we must proceed with the ceramic survey of the remaining strata of our site.

c. Stratum 5 [Plates LIV; LV]

Stratum 6 marked the end of the chalcolithic period; with the present level begins the Copper Age proper. The preoccupation with metal, which is reflected in the abundance and the variety of copper objects, has as its inevitable corollary a diminished interest in the finer points of the potter's craft. The technical improvements that had been introduced by an older generation are, of course, retained. The firing continues at a high temperature and the grey and buff wares which now predominate are admirably turned out. But there is little time for experimenting with new shapes; they may be tried out by individual potters, but the interest of the age is not centered on ceramics. Thus, for example, a crude attempt at evolving a jug was made in this period: the back of the neck was squeezed and drawn up, more clay was put on, and the protruding part was then pierced and fashioned into a handle. Little wonder that the creation stands quite isolated.

Nor has much been retained of the earlier achievements in the technique of painting and of incised work. Little of that has been carried over and cultivated. Only a very rudimentary application of what had been recently a fine art is now sanctioned or made worth while. The ornamented surface is limited to the space between the shoulder and the rim. The repertoire of designs is strikingly small. The height of elaborateness is represented by rows of triangles filled with parallel strokes and placed over a double-rope molding [Plate LV, 4]. Occasionally dots of bituminous black paint are interposed between the triangles. Plain red bands applied around the shoulder are found at times on the smaller pieces.

Washes, or slips, are almost universally employed.⁶ Smoothing is achieved through side-dressing or by criss-cross stroking. For the jars

⁶ In all the earlier occupations of Tell Billa these two methods of securing and decorating the surface of the fabrics are to be observed side by side. In no stratum was the slip ware supplanted completely by the 'wash' ware, though such a tendency makes itself felt in the upper levels.

[Plate LV, 3, 4] chopped straw and ground sherds may be used as tempering material (*degraisant*). The cooking pots are furnished with ledge handles. Some of the larger jars have spouts in the form of rams' heads.

A common shape in this period is a virtually straight cup with flat or slightly rounded base [Plate LIV, 1-3]. Most characteristic, however, is a round-sided cup with a delicate out-rolled rim [Plate LIV, 6, 8]. These products are always well baked and carefully finished. The few specimens that bear decoration have rows of oblique strokes above the shoulder, with a second row of dotted lines which slant in the opposite direction [Plate LIV, 8]. This type represents the finest wares that our stratum has to offer; of a high order mechanically, but otherwise undistinguished. In the profound cultural transformation that followed in the wake of the Copper Age, pottery is the principal sufferer, while other arts prosper.

d. Stratum 4 [Plates LVI-LIX; LXXII]

With this level we arrive at a later period, to which copper had long ceased to be a novelty. An adequate balance between the basic contemporary industries had been established, and pottery had again come into its own. There is very marked progress in shapes and renewed interest in decoration. The firing is good and the wares are often remarkably fine. Grey is still a favorite color, but buff and brown are quite popular. Slips are applied as a rule, their colors ranging from cream to light red.

Great progress is witnessed in the manufacture of bowls [Plates LVI; LVIII, 1, 3, 5; LIX, 2, 3]. The older rounded and flat-based types are now but seldom reproduced. Most specimens of this group boast ring-bases instead, and this refinement has spread also to other classes of fabrics [Plates LVII, 2, 5, 7, 8; LIX]. The shoulders are sharply marked and the straight parts of the sides are not infrequently grooved [Plates LVI, 1; LIX, 3]. The rims are generally brimmed or lipped, and they are in many instances relieved with painted designs.

Cups too are often ribbed [Plate LVII, 1]; usually they are straight-sided, but a graceful variation may be attained through a slight contraction in the middle [Plate LVII, 2]. Jars appear in a variety of shapes: in addition to the most prevalent type with slightly marked neck [Plate

LVII, 3], we find them ovoid [Plate LIX, 1], slender-necked [Plate LVIII, 9], or narrow and elongated [Plate LVII, 5]. Pottery stands and strainers are now more abundant than they were in the lower strata. Small squat pots may have knob handles vertically pierced for suspension [Plate LVII, 4]. With the cooking pots the ledge handle has now established itself definitely as the form that was most practical for this particular purpose.

It has already been stated that ornamentation is again in vogue. After a period of neglect painted and incised designs have been revived, although this fashion fails to command the attention that it did in strata 7 and 6; the real renaissance was to be reserved for the next level. The space allowed for decoration is still confined to the parts above the shoulder; the repertoire of patterns, however, is distinctly richer and more varied than in stratum 5.

The colors are red, various shades of brown (especially bistre), and black. The scheme is no longer strictly monochrome, since red and black [Plate LV, 9] and bistre and black [Plate LIX, 4] are occasionally combined. The typical metope arrangement of stratum 7 is all but absent, which is a valuable point of difference inasmuch as there is, in many instances, a superficial similarity in motives and a practical identity of background (cream slip for the most part). Fortunately, there is no danger of confusing the shapes of 7 and 4, as we have just seen.

The simplest painted decoration is found on the rims. It consists of parallel transverse strokes, in black or bistre, broken up by a few silhouetted triangles [Plate LIX, 3]. The fine vessel given as Plate LIX, 4 combines the most characteristic geometric patterns: bands (bistre), lattice (black), saw-tooth (black), and hatched and concentric triangles (black). Naturalistic and geometric designs are found on the cup which bears the number 5 on the same plate: a goat between a mountain (concentric triangles) and a conventionalized tree.

The same motives will be found on the sherds reproduced on our last plate [LXXII]: goats, trees, and mountains, generally in typical combinations. In addition we find a characteristic aquatic bird, which differs as markedly from the birds of stratum 7 as it will from those of 3, which we shall have to discuss very soon. In short, the painted pottery of level 4 is distinctly individual, for all that it constitutes only a small propor-

tion of the fabrics of this period. It can be readily identified even when it happens to be accidentally intrusive in other levels. A case in point are our specimens Plate LIX, 3-4. They were recovered in a tomb (field number 61) that was stratigraphically lower than the remains of the fifth level. Nevertheless, its pottery could not be assigned to that stratum, or to 6, on account of the evidence of shapes and decoration. We were simply confronted with an unusually deep burial that happened to cut through a lower occupation layer. Hence it was no surprise to us when the bronze and silver objects from the tomb under discussion turned out to be typical of stratum 4.

The incised designs are neither as common nor as elaborate as the painted ones. Double-rope moldings [Plate LVIII, 9], combed bands [Plate LVII, 7], and hatched triangles practically exhaust the list of current motives. Rows of black-painted dots may be placed between or above the incised figures just as on the wares of 5.

In concluding this section attention should be called to the cross which represents a potter's mark on Plate LVIII, 9. A few similar marks were found on sherds. Other details of this kind must be omitted from this summary review owing to lack of space.

Again it is necessary to reserve for a later section the interesting question as to the influences that might be held responsible for the changes and innovations which characterized the stratum just discussed. For the answer is not immediately obvious. This difficulty will not be present in connection with the level to which we shall now turn; there the explanation will not be subject to any doubt.

e. *Stratum 3* [Plates LX-LXIV]

We have seen that the fabrics of the preceding period were in the main typical for that stratum. Now we ascend to a level whose wares are distinctive to a far greater degree. The principal shapes are new; they have no parallels in the earlier deposits and they are not to be carried over into the succeeding layers without extensive modifications. The same applies to the decoration; the painted designs of stratum 3 contain a series of tell-tale features which are automatically converted into obvious stratigraphic milestones. Whereas the preceding occupations never failed to yield some evidence of cultural continuity, the present

stratum stands unique in the sense that the main ceramic shapes and the outstanding decoration motives are here introduced for the first time. There can be thus no doubt that the pottery of our period is the product of a civilization which had come in from the outside.

Chemically the clays are similar to those which had been used by the potters of the seventh stratum (see above). So are the pigments that could be compared.⁷ The materials are thus proved to be local and not imported by the incoming population. These conclusions are abundantly confirmed by other details which cannot be discussed at present.

Turning now to the shapes, we find two that are especially characteristic: a slender goblet [Plate LXI], and a small cup which may be U-shaped [Plate IX, 1], V-shaped [2, 4], or globular [6]; in each of the above types a pronounced button-base is an almost indispensable feature. Pedestal bases are used in small bottles or jars [Plate LXII, 4, 5]. Ring-bases occur with the larger straight-sided jars [Plate LXII, 7] and lentoid pots [8], and also with the dishes [1, 2], which are, however, just as frequently flat-based [3]. Generally speaking, the bowl is on the decline; it is either flattened into a brimmed dish or raised into a cup. Among the rarer shapes may be mentioned the amphora [Plate LXII, 6], which has in this case two spouts at the base topped by a scorpion-shaped incised design; and the censer [Plate LXIII], whose simpler prototypes are known from Gawra, but not from the earlier strata at Billa.

The usual ware is buff, with grey coming next in order. A reddish ware is witnessed occasionally in the larger vessels. The fabrics are often extraordinarily fine and thin, almost pastes. Washes are rarely substituted for slips, least of all in the painted specimens; the slips have the usual cream shades that have been noted previously, with perhaps a certain tendency to pink. The firing temperature was generally at 1600°. Nearly vitrified pieces, not uncommon in stratum 5, are now exceedingly rare. The potters were evidently careful not to allow excessive heat to interfere with the color of the painted decoration.

We must now survey briefly the character and the arrangement of the ornamentation. This is of the painted variety in all but a few of the larger storage jars, where the combed technique is difficult to displace.

⁷ For a discussion of these technical details see *ESOP*, I, §4.

The colors are light red, dull black that rarely passes into brown, and white; the latter color is primarily harmonized with black, especially in dotted patterns where either the background or the dots may be expressed in white. It has been indicated above that the slips (or the occasional washes) are invariably in light shades.

The simplest designs consist of plain bands, usually in red, applied to the upper parts of the vessels. They are found as a rule on the decorated cups, as contrasted with the goblets on which the contemporary pot-painters exercised most of their ability and ingenuity. For it is from these latter types [Plate LXI] that our knowledge of the extensive repertoire of motives of this period is almost exclusively derived. It should be stated at the outset that there is no definite relationship between design and color: the same kind of decoration may be painted in black or in red, and although white occurs most frequently in combination with black, instances of a red-and-white scheme are not entirely lacking. To be sure, the application of either black or red as basic colors was clearly intentional, and the ultimate result can in no way be attributed to the accidents of firing; but the variations thus introduced were purely external.

A selection of the most characteristic designs of our stratum is presented on Plate LXIV. It will be seen at first glance that though geometric patterns predominate, natural representations are far from rare. Stylization is well exemplified in 2: 1, 6 (row, and number from left to right). The naturalistic motives are confined to birds [Plates LX, 3; LXIII; LXIV, 1: 1, 3-6; 2: 1, 3-4, 6], goats [Plate LXIV, 1: 2], and fish [Plate LXIV, 2: 4]. No human representations have been found on the pottery of stratum 3, and the trees that were comparatively common in the preceding layer (compare Plate LXXII) are also missing. Both periods have a marked predilection for picturing birds and goats; this, however, is as far as the parallelism goes. In essential details of technique and arrangement the painters of the two strata were very far apart. Without going here into the nicer distinctions, two outstanding differences may be pointed out. Firstly, the animals of stratum 4 are always painted in silhouette [Plate LXXII]; in the present instance they are pictured as a rule in outline and their bodies are filled with dots, strokes, cross-hatching, and rows of semi-circles [Plate LXIV, 1: 2]; the sil-

houette is comparatively rare [Plates LX, 3; LXIII; LXIV, 1: 4]. Secondly, the arrangement in stratum 4 was antithetic, or else the animals were represented as single or in a closed group; the third stratum, on the other hand, specializes in running friezes, and the idea thus conveyed is one of endless repetition of the given design.⁵

Birds furnished the favorite motive to the pot-painters of our period. They are found in a variety of sizes and of poses. Especially interesting because comparatively rare are representations of birds in flight [Plate LXIV, 1: 4], or with heads turned back [Plate LXIV, 2: 3]. Worthy of notice is also a design which shows a bird perched on the fin of a fish [Plate LXIV, 2: 4]; similar, though not identical, combinations are known from both Egypt and Mesopotamia at much earlier periods.⁶

In turning to the purely geometric motives we again notice the predominance of dotted patterns [Plate LXIV, 4: 3-5; 5: 1-3, 6; 6: 1; 7: 1-2, 5-6; 8: 1]. It is difficult to determine at present how many of these designs should be credited with naturalistic prototypes. Thus Plate LXIV, 5: 5, appears to represent a conventionalized bull's head (as at Tell Halaf), and 5: 6 points rather clearly to feathers; but other instances are ambiguous, and one might argue with an equal show of reason for either a geometric or a naturalistic origin. For many of the individual motives there is a bewildering array of variations. A detailed description would carry us too far afield, and we must, therefore, allow the plate of designs [Plate LXIV] to speak for itself. Particular attention need be given to only one group of designs, namely, spirals [8, 6], S-spirals and scrolls (row 3); these latter comprise the most popular geometric patterns of the age and they are represented in a notable variety of combinations (note especially 3: 1, and the guilloche, 3: 6).

In the grouping and arrangement of motives on a given vessel the contemporary painter was not tied down to many set rules. He could choose freely from the available repertoire and there was no objection to arranging naturalistic designs together with the geometric ones, though the latter alone were often deemed sufficient (compare Plate LXI). The freedom of the artist was restricted in one respect only: a motive once

⁵ The fact must not be overlooked that remarkable friezes of the same civilization are known from the wall paintings at Nuzi.

⁶ *FSEP*, I, 139.

chosen had to be carried around the entire piece. It follows that the arrangement of the designs was strictly vertical, the individual registers being generally set off from one another by means of bands or open spaces (for an exception compare Plate LXII, 7). The goblets [Plate LXI] show three such registers as a rule, but a greater number is also possible [Plate LXI, 2]. In other fabrics the height of the specimen regulated the number of the painted rows, as is best illustrated in the case of the incense burner [Plate LXIII].

While representations of humans have not been found among the painted designs of this stratum, terra-cotta figurines of both men and animals frequently display painted decoration. Human heads attached to rims of vessels sometimes have the head and the eyes set off in red. Model bricks might show crudely incised figures of men.¹⁰ As an independent element, however, in the painted ornamentation of pottery the human figure does not seem to have been employed by the artists of Billa 3.

f. Stratum 2 [Plate LXV]

No attempt has been made thus far to identify the civilizations whose wares we have been considering beyond listing them in their proper stratigraphic sequence. For this procedure the comparative obscurity of the periods under discussion was chiefly responsible and it was deemed advisable, therefore, to postpone attempts at identification for a separate presentation in the next section. In the present instance, however, and with the remaining pottery groups, such circumspection is no longer required. For with stratum 2 we arrive at a period that proclaims its identity through scores of cuneiform tablets and inscribed bricks, not to mention other material remains of equally unmistakable origin. We are at present at the close of the second millennium, which in this case corresponds with the end of the Middle Assyrian period; the following level will represent the beginning of the first millennium, or late Assyrian. Now Assyrian pottery is reasonably well known from other sites. At Billa it is represented by well over a hundred intact specimens and by dozens of distinct types. Obviously this is neither the time nor

¹⁰The model shrine on which the censet was found is constructed in the main of such incised bricks. The human figures are indicated as double triangles with four strokes for arms and legs and an equally casual head.

the place for an exhaustive presentation of the available material. Our immediate purpose will be amply served if a plate of illustrations is devoted to each of the two Assyrian levels, with only such comments as are essential to the preservation of continuity in a summary presentation such as the present one.

Red ware is now definitely on the ascendant threatening the long-established supremacy of the grey and buff fabrics. Washes are now the rule and slips are rare; when employed they are apt to be in deep and lustrous red.

The bowls come back into their own after a period of neglect in the preceding stratum. They are generally carinated and lipped, the rim overhanging at times [Plate LXV, 1-4]. Well-marked ring-bases are in vogue, and they are frequently emphasized by outside [Plate LXV, 2] or inside grooves.

Both the cup and the goblet are continued, but certain important details have been radically modified. This is especially noticeable with regard to bases. The self-supporting button-base has been given up in favor of the nipple type [Plate LXV, 6], which may be sharply marked [Plate LXV, 5]. Among the new shapes may be cited a pedestaled incense-holder [7]; it foreshadows the return of the chalice in the next stratum.

What little decoration has been carried over is very rudimentary and uninspiring. Crude wavy bands come up now and then on storage jars. Red bands may be painted on the inside rims of bowls or around the necks of smaller jars. This poverty of ornamentation is but slightly compensated for by the increased use of the groove (generally at the base of the neck) and a sparing application of the ridge [Plate LXV, 1, 8]. It is clear that the Assyrian artist had little time for pottery; his energy was almost wholly absorbed by stone-cutting and modeling in terra-cotta.

g. Stratum 1 [Plate LXVI]

The distance in time between the periods represented by strata 1 and 2 does not exceed three centuries, to judge from the inscribed material found in the two layers. Since the culture of stratum 1 is essentially a continuation of 2, few important changes need be expected. This theo-

retical premise is amply borne out by a study of the pottery of the respective periods. The wares are practically identical and the two levels show the same aversion to (or neglect of) ornamentation. Nor is there much difference in shapes. The impractical nipple-bases are on the decline, and a half-hearted attempt is made to restore the more economical button-base [Plate LXVI, 6]. The bowl retains its prominence, and it is joined by a considerable number of flat dishes and saucers [Plate LXVI, 1-5]. Jugs, pitchers, and amphorae make their appearance, thus preparing us for the prevalence of these types in post-Assyrian times. The chalice is represented by a few specimens, bringing up memories of the prehistoric strata 7 and 6, where this graceful type was such a notable characteristic. With these brief remarks we may leave the Assyrians for a cursory review of the wares of the latter half of the first millennium B. C.

g. Post-Assyrian Wares [Plates LXVII; LXVIII]

It was pointed out in the introductory part of this essay that the fabrics following the Assyrian occupation have no independent stratigraphical status in the portions of the mound that have been excavated so far. They are known to us from burials which encroached upon the remains of the two Assyrian strata; since they were not recovered from normal occupation layers, all these late specimens have been grouped together as post-Assyrian, leaving a more precise division into the component historical periods for the time when the bulk of the material in question has been obtained from a normal sequence of levels.

A conspicuous feature of our late pottery is the frequent application of glazes. With the exception of storage jars, all types of fabrics were often subjected to such a treatment. Among our glazed pieces are included bowls [Plate LXVII, 1, 2], jars [Plate LXVII, 5], and amphorae [Plate LXVIII, 4], not to mention bottles and jugs. The most successful glaze has a silvery sheen and it is found primarily on bowls and dishes. The amphorae specialize in a bluish glaze, while the jars and pitchers often show a greenish shade. Many of these variations are almost certainly accidental.

Little space need now be devoted to a characterization of the shapes. The rims of the bowls are not infrequently grooved, and the ring-base

exhibits on occasions rather fanciful variations. The pilgrim flask [Plate LXVII, 3] may be noted, as well as the graceful and slender bottle [Plate LXVII, 4], which is ordinarily glazed. Pitchers [Plate LXVII, 6, 7] and jugs [Plate LXVIII, 1, 2] are now among the commonest ceramic types. The amphorae [Plate LXVIII, 3, 4] seem to have been reserved for more festive occasions. Relief and incised ornamentation is not rare now [Plate LXVIII, 3], as is well known from the Parthian pieces found on other sites. These general observations bring to a close our survey of the pottery from the seven main strata of Tell Billa, and of the later funerary ware.

THE BILLA WARES AND THEIR ANALOGUES

In the foregoing chapter our attention was centered on the typological study of the pottery from Tell Billa; the fabrics from the individual strata were discussed as to technique, shape, and decoration. No other remains of the layers in question were brought into our inquiry in order that the wares might be considered by, and allowed to speak for, themselves. All recourse to the comparative archaeological method was consequently avoided for the time being. As a net result we have obtained a series of pottery sequences, vouchered for by the thoroughly reliable evidence of stratigraphy, which we may now convert into criteria for relative chronology. These sequences having once been ascertained, an investigation into consequences can no longer be avoided. For in addition to setting up the order of ceramic developments and changes at Tell Billa it is essential to find out what contacts our site may have had with the outside world. It is only with the aid of such synchronisms, based on the identification of the Billa wares with those from other regions, that the historical significance of our earlier levels can be made to appear in a proper light. From the typological stage the investigation develops into a cultural one, with the results furnished by the analysis of pottery serving as a sound foundation for more general deductions. The two lines of inquiry have been kept strictly apart, instead of being combined and synthesized, so that the certain might be clearly differentiated from what is often no more than probable. The degree of probability attaching to our cultural conclusions will largely depend, of course, on the extent and force of the available data.

Unfortunately, we cannot go at present into as much detail as the subject warrants. Considerations of space compel us to confine our discussion to a minimum of relevant arguments. Pottery will naturally remain our basic material, and illustrations from other groups of remains will be adduced only when absolutely indispensable; for we must not anticipate unduly the forthcoming publications in this series.

To recapitulate, then, our present problem is to group the occupational layers of Tell Billa into cultural units, and to see whether the cultures in question may be correlated with any civilizations known from other sites. Again we shall start with the earliest strata and our investigation will carry us as far as the Assyrian period, which in common with the subsequent stages stands in no need of further identification.

a. Strata 7 and 6

From the survey of the ceramic products characteristic of these two strata, it was apparent that the differences between them were not so much cultural as chronological. In other words, the pottery of stratum 6 was a normal development from the wares of the preceding period. The most typical shapes had been carried over, and though considerable technical progress was evident, no proof of the presence of a new people with a totally heterogeneous civilization could be obtained from the material at hand. We are therefore entirely justified in considering the two levels as representative of successive stages of one and the same culture. Our next step will be to seek out, if possible, the analogues of Billa 7 and 6.

Happily, we shall not have very far to seek. One intact painted chalice bearing an unmistakable stamp of affinity with the fabrics of Billa 7 is known from the seventh stratum at Tepe Gawra: definitely related wares have been found also at Nineveh.¹¹ In addition, Gawra has yielded specimens corresponding to the incised ware of Billa 6. Thus the civilization in question is witnessed in both its stages over an extensive area east of the Tigris.

¹¹For the Gawra chalices the reader may be referred to *BASOR*, 48, page 18. The material from Nineveh is cited in the same place, note 8. The splendid pieces of this class which Dr. Campbell Thompson found in the season of 1930-31 will, when published, increase considerably the volume of relevant sources.

In the south our chalice seems to have been less common. Where it occurs, however, it proves to be of inestimable chronological value, since it enables us to express the relative position of the levels under consideration in terms of south-Mesopotamian stratigraphic sequences. When we find in the lowest layer of Fara a painted fragment¹² showing the same procession of birds that is so well attested at Billa 7,¹³ it is reasonably safe to assume that the strata under discussion were contemporaneous. Now the earliest level at Fara falls within the so-called Jemdet Nasr period,¹⁴ which precedes the early dynastic age that is ushered in so brilliantly by the First Dynasty of Ur. Tentatively, therefore, the chalice ware of the north may be synchronized with the first predynastic culture of the south (numbered in the order of antiquity).¹⁵ This identification can be raised to an absolute certainty with the aid of other remains. For among the most typical fabrics of the Jemdet Nasr period is included the squat pot with sharply marked shoulder and overhanging rim,¹⁶ and this type is well represented at Billa 6 (compare Plate LIII, 6). Moreover, similar cylinder seals are known from both regions, which share also the custom of contracted burials.

A warning is here in place against confusing contemporaneity with complete cultural identity. It is perfectly true that the north and the south have much in common in this particular period, but the differences are no less notable. The typical polychrome ware that is so justly associated with the Jemdet Nasr stage is totally absent at Billa and on the related northern sites, as are also the pictographic and semi-pictographic tablets, which now appear at Uruk.¹⁷ Kish, Jemdet Nasr, and in other southern centers. All that we are justified in claiming is correspondence in date and overlapping of certain cultural elements. It may be added

¹² Reproduced in Ebert's *Reallexikon der Vorgeschichte*, 14, Plate XL.

¹³ Compare our Plate LXXII, bottom row, left.

¹⁴ See the account of Dr. Erich Schmidt in the *Museum Journal*, XXII, 211 and following.

¹⁵ For a discussion of the synchronism in prehistoric Mesopotamia compare the paper by the present writer in the *American Journal of Archaeology*, 1932, 467 and following, and the references cited there. Owing largely to the fact that this paper had to be prepared on a few days' notice, one of its statements is urgently in need of correction. Strata XI-VI of Warka (in Dr. Jordan's numbering) should have been assigned to the Uruk period and not to the el-Obaid age. Though one period is thus to be lengthened and the other shortened, the final results are not affected by this shift.

¹⁶ Compare Ernest Mackay's 'Report on the Excavations at Jemdet Nasr,' *Anthropology Memoirs of the Field Museum of Natural History*, 1, 245 and following; Erich Schmidt, *Museum Journal*, XXII, Plate XXIV, 3; Woolley, *Museum Journal*, XXI, 2, Plate XI, figure 12.

¹⁷ See especially Jordan's *Dritter Vorläufiger Bericht über . . . Uruk*, 11 and following.

that the chalice appears to have been at home in the north, while writing was as yet peculiar to the south.

It follows from the preceding remarks that we cannot expect to locate in Lower Mesopotamia the original source of the chalice ware and its accompanying fabrics. For that matter, it is difficult to discuss origins without first ascertaining the extent of distribution. Now Frankfort's recent studies have led him to assign the type under consideration to an Anatolian-Transcaucasian source.¹⁸ I believe that he is on the right track. At all events, our pottery enjoyed its greatest vogue in the Highland Zone;¹⁹ it is well attested as far east as Hissar (east of Teheran), where Erich Schmidt found it abundantly represented in conjunction with the cup that tapers to a point at the base, precisely as at Billa 6 (compare Plate LII, 1-8).

In summing up this part of our inquiry the following conclusions may be offered: 1. The earliest civilization at Tell Billa is represented by strata 7 and 6; the most characteristic ceramic type of this period is the chalice, which is at first painted (7), later on incised (6). 2. The date of this cultural stage is established on the basis of southern analogues; it corresponds to the Jemdet Nasr period, which leads up to the early dynastic age, or Early Copper; as an absolute date may be set down the turn of the fourth millennium. 3. Culturally, the chalice period fails to furnish a complete parallel to the Jemdet Nasr stage; the two overlap without being identical in every detail. 4. The diffusion of the chalice ware and the civilization that produced it corresponds roughly with the extent of the Highland Zone; it has been traced so far from Anatolia to Central Persia, and the original source of this culture may perhaps be located within this larger area.

In conclusion I may be permitted to make a timely suggestion. The northern counterpart of the Jemdet Nasr period is urgently in need of some definite designation. The southern term is apt to be confusing inasmuch as it may imply not only contemporaneity but also cultural identity. If the practice of naming a given civilization after the site where its remains were first discovered is to be followed throughout,

¹⁸ *FAS*, 33, and Table III. On latest evidence the chalice belongs definitely to the Jemdet Nasr period and not to the preceding cultural stage.

¹⁹ For certain remarkable, though not necessarily conclusive parallels with Anau III (note especially the representation of trees), compare Pampelly, *Explorations in Turkestan*, I, Plate XXXIV, and our Plate LXIX.

Tell Billa is certainly in line for such an honor. May we, therefore, introduce the name 'Billa ware' as generally indicative of the civilization which we have just been discussing? Partially related cultures are more subject to confusion than totally dissimilar ones, and strict terminological differentiation is likely to make for greater clarity.

b. Stratum 5

In the present examination we shall have comparatively clear sailing even though our main criteria are not furnished by the ceramic material. This time it will be the copper objects and cylinder seals that will yield the necessary chronological information. But before we cite the relevant details, one important synchronism must be first established. It will be remembered that the seventh level of Gawra (and also the topmost subdivision of Gawra 8) could be convincingly correlated with the two lowest strata of Billa. The correspondence was complete with regard to date and quite instructive as to material remains. On both sites the occurrence of painted and incised chalices exhibited the same order of sequence. If I seemed uncertain about setting up Gawra 7 as a thorough-going parallel to the Billa culture, my misgivings were primarily due to the fact that the Gawra stratum under discussion is too strongly rooted in the preceding period. In other words, the chalice folk who built the first settlements of Billa did not completely dispossess, it would seem, the contemporary inhabitants of Gawra; on the latter site the old and the imported civilizations continued for a while side by side, while Billa enjoyed a fairly homogeneous occupation. Now in the case of the succeeding settlements (Billa 5 and Gawra 6) there is no suspicion of such uneven starts; on both sites we encounter cultures that are of equal date as well as completely identical. The same people had evidently brought to a close the Billa period on both sites and built their own townships on the remains of the preceding chalcolithic strata; the Copper Age was introduced by the same group both at Billa and at Gawra. For the purpose of the present discussion the finds from the one mound have as much force as the corresponding remains from the other.

To return, then, to the copper objects at Billa 5, we are left in no doubt as to their age and outside connections. Spatulate pins²⁰ and

²⁰ Identical with *FAS*, figure 7, specimen number 9.

characteristic lance-heads²¹ inform us that the destroyers of the Billa culture were active in the north while the first historical dynasty of Sumer was removing the last traces of the Jemdet Nasr age in the south. Massive ridged axe-heads from Billa and Gawra align themselves as exact counterparts of a similar weapon which was recovered in an early tomb at Ashur.²² Not content with such important revelations, these metal objects have yet a further tale to tell. The spatulate pins are paralleled in Transcaucasia, the lance-heads in North Syria.²³ The copper wave that struck Mesopotamia at the beginning of the third millennium evidently had its origin in submontane regions.

The cylinder seals confirm the dating based on the study of the implements and weapons of copper. Many of the fine specimens dug up at Billa 5 and Gawra 6 bear a definite relationship to the cylinders of the Royal Tombs and the First Dynasty of Ur. Others invite comparison with what we later learn to recognize as Anatolian types. The Early Copper period at Billa (and at Gawra) was thus decidedly syncretistic. It welcomed influences from the north just as did its chalcolithic predecessors; in addition it had relations with the south where the Sumerians were emerging as a powerful cultural factor.

That the wares of the fifth level of Billa and the sixth stratum of Gawra show no marked differences goes now without saying. Parallels from Ashur and the contemporary Sumerian deposits are expected and found without much trouble. The one important difference between Sumer and our northern settlements is to be observed in the choice and appearance of the building materials. The southern townships of this period are invariably constructed of plano-convex bricks. At Billa and at Gawra the foundations are of limestone, laid generally in three rows, upon which are set walls of flat-topped mud-bricks. Again we are forcibly reminded that conditions were not wholly similar in Upper and Lower Mesopotamia. These differences in physical background were reflected in an appreciable disparity of certain cultural elements and

²¹ Compare *FAS*, figure 7, specimens number 19 and 38.

²² See provisionally Andrae, *Die Archaischen Ishtar-Tempel in Assur*, Plate 60, bottom row, fourth specimen from left. This axe dates from the Ashur stratum E (period of Bur-Sin of Ur), and the accompanying pottery bears resemblance to the ware of Billa 4. There are, however, ample reasons for the assumption that the Ashur finds in question are descendants of similar, but earlier, prototypes.

²³ See above, notes 21 and 22.

probably in the composition of the respective ethnic groups. In date, however, the agreement was fortunately complete. And it is on this fact that we wish to place just now particular emphasis. It is the pivotal point in our chronological sequence since all the other strata can be conveniently placed before or after the Early Copper level, as the case may be. The chronology of the periods that immediately precede or follow must remain, on the other hand, strictly relative until inscriptional material comes to our assistance. Whether this may be looked for in the hitherto unexcavated sections of Billa 7 and 6 is a very debatable question. But it is altogether likely that epigraphical sources will turn up in the fourth stratum, to which we must now give our attention.

c. Stratum 4

It may well be that my optimism concerning our chances of finding inscriptions at this level was merely the expression of a pious wish. To be sure, we have at present a faintly inscribed cylinder seal from the stratum under consideration and the hope for more conclusive and articulate documents is therefore not entirely unwarranted. At all events, an unambiguous synchronism of some sort would be of great help in fixing the date of the fourth stratum of Billa. The available sources allow as yet too wide a margin. We have seen that the preceding cultural stage is to be placed early in the third millennium, that is, not later than the first quarter. It soon will be demonstrated that Billa 3 may safely claim for itself the middle of the second millennium. For the intermediate period the all too comfortable time limit of more than twelve centuries is thus made available and we may therefore be pardoned for hoping fervently for evidence that would radically narrow down the chronological possibilities. Attention has already been drawn to the fact that both 4 and 3 have their substrata, but we cannot operate with them with any degree of confidence until the excavations have gotten away from the edge of the mound. In the meantime we must be contented with what light can be gathered from the evidence of pottery, seals, and metal objects. It will be seen presently that these ordinarily reliable criteria fail to be very explicit in this case. Both the wares and the bronzes admit of more than one interpretation, some suggesting an early date while others seem to point to a later period. By an unfortun-

nate coincidence the cylinder seals are scanty and mostly damaged, so that one is reluctant to entrust to them so important a decision as the one that is now pending.

The ambiguous character of the remains of Billa 4 for the purposes of dating will be readily appreciated when the few bronzes of this period have been considered. A contemporary burial yielded among other objects a fine crescent-shaped axe with rivets to hold the wooden shaft, a splendid dagger with mid-rib, and a long spiral-form piece recalling the 'armlets' of the Caucasus.²⁴ Now all these types of bronzes come up as early as the first dynastic period, but they are also encountered over a very extensive area a thousand years later. Clearly, there are here no precise chronological indications. Perhaps another metal implement will be found more committal. Among the finds of this period, there was prominently represented a type of pin, in bronze or in silver, with ornamented head and small ring near the shank. Related specimens occur in the subsequent stratum, and a date near the turn of the third millennium is thus made plausible; however, the evidence is far from compelling.

On turning to pottery we find ourselves confronted with similar difficulties. The marked development in shapes, especially as regards the bowls, suggests a gap of several centuries between the present period and the preceding one. This is scarcely definite enough. In decoration we have noticed the prevalence of such motives as trees, silhouetted birds and quadrupeds, and triangles representing mountains (compare Plate LXXII). Little progress can be made by considering any one of these motives separately, for analogies attracted in this manner would be little better than meaningless. At best we should be asked to adumbrate the tree of Anau III and the not entirely dissimilar goats of so-called Susa II, with the result that the evidence of stratigraphy would be thrown overboard and Billa 4 would be dated earlier than 5. Careful observation in the field and painstaking recording has, of course, spared us such nightmare acrobatics. In point of fact it is Billa 7 to which some contacts with Anau might be reasonably credited;²⁵ to the fourth stratum it is a far cry indeed.

²⁴ Compare *FAS*, figure 7, numbers 30 and 33; also see pages 52 and following of the same monograph.

²⁵ See above, note 20.

A much more profitable comparison may be made with the wares of a wholly different region and period. In the southwest, especially in Palestine, the situation is distinctly promising. In that region we find duplicated the entire repertoire of motives known from Billa 4: stylized trees, whose foliage is reduced to a star-shaped figure; mountains pictured as triangles; birds and quadrupeds in silhouette. Incomparably more conclusive is the fact that all these motives are arranged into identical groups: the goats nibble at the trees, the animals stand between mountains, the parallelism extends even to the unusual combination of birds being carried by quadrupeds.²⁶ Such complete identity of complicated designs cannot be due to mere coincidence. Can as much be said for the shapes? Not exactly. Of the same date as the decoration just described are Palestinian bowls that correspond to those of Billa 4; in both districts, too, the ring-base is prominent. But the common western jug has not established itself as yet at Billa.

What is the date of the Palestinian fabrics under discussion? Most of them fall within the period between the sixteenth and eighteenth dynasties, that is, the end of the Hyksos domination and the beginning of the New Kingdom; in other words, the second quarter of the second millennium B. C. Ordinarily such evidence would be ample to establish the date of our Billa period to everybody's satisfaction. But the present problem has additional complications. For associated with the western pottery discussed above there are other wares, which we are constrained to classify with the ceramic products of Billa 3. On the latter site the two groups are clearly differentiated, suggesting a considerable break in time between the strata in question. In Palestine (and the neighboring districts) the same groups are telescoped.²⁷

There is only one solution, it would seem, that is capable of accounting for such anomalies. The analogues of Billa 4 reached the eastern coast of the Mediterranean appreciably later than the time of their arrival at Billa; and conversely, though this conclusion is not inevitable,

²⁶ Compare the groups in *CPP*, 'Decorated Fragments,' sections 16-17.

²⁷ This is especially true of the pottery which is decorated with designs of birds (*CPP*, 'Decorated Fragments,' section 18). By the time of the eighteenth dynasty we find in Palestine analogues of Billa 4 as well as of 3. Compare also *FSEP*, II, 72 and following; also 167 and following. For the latest discussion of Palestinian pottery sequences see the study by Albright in *JASOR*, XII (1932).

the relatives of Billa 3 appear to have made their first stop in the west. It would follow at any rate that the former group came into Palestine from the north, a region with which Billa could also communicate more or less directly. And indeed, the northern origin of the earlier Hyksos pottery is now generally admitted.²⁸

I regret that the Hyksos had to be summoned in this connection, since the introduction of so controversial an element should not be ventured where the opportunity for adequate documentation is not to be had. Under the circumstances, however, this step could not be avoided. There is, of course, nothing inherently improbable in the assumption that some of the elements which were later to swell the ranks of the Asiatic invaders of Egypt²⁹ should be encountered on a north-Mesopotamian site at a presumably early date. In a large migration of peoples, such as the one in which the Hyksos formed but a single stage, many lines of advance may be witnessed from a single radiating center. We know that the people of Billa 4 arrived from the north-east, since the combined evidence of the bronzes and the pottery points in that direction. For the date of that arrival we must still have recourse to guesses, though the foregoing inquiry has helped to narrow down the margin. Provisionally, I am inclined to see in the inhabitants of our stratum the forerunners of those Anatolians that were presently to sack Babylon³⁰ and put an end to the dynasty made famous by Hammurabi. Future excavations at Tell Billa will show how much truth there may be in this theory.

d. Stratum 3

Since both the identity and the date of this period can be established without any great effort, our discussion may begin with the data that will help us settle these two important points. The excavations at Nuzi,

²⁸ *FSEP*, II, 168. For recent material on the Hyksos compare Albright, *BASOR*, 47, page 8 and note 2. See also Ohlstedt, *History of Palestine and Syria*, pages 115 and following. Albright (in the reference cited) lays emphasis on the similarity between the fortifications of the Hyksos and those of Eastern Europe and Turkestan. It is not wholly improbable that the few correspondences between the motives of Billa 7 and Anan III should be viewed in the same light. Billa 4 would thus have preserved echoes of much earlier contacts.

²⁹ The present writer has gathered and expects to publish soon a considerable body of evidence to the effect that the Hurrians (Billa 3) were conspicuous among the later Hyksos groups.

³⁰ It is not in the least unlikely that these *Hatti* were allied with the eastern mountaineers. Archaeological evidence favors the assumption that the influences of the Anatolian region extended far to the east; compare *FAS*, pages 57 and following.

near Kirkuk, have furnished Assyriologists with several thousand cuneiform documents from which it has been learned that the population of the district was a branch of the extensive Hurrian group.³¹ The country of Arrapha, in which ancient Nuzi was situated, was an eastern dependency of the kingdom of Mitanni at the time of Saushtatar, the founder of a well-known Mitanni dynasty. Saushtatar being a contemporary of Tuthmosis III, the period at which Nuzi flourished is thus placed at about 1500 B. C.

Now the dominant ceramic shape at Nuzi was the slender goblet, or wine-cup, which is so well attested in the third stratum of Billa [Plate LXI]. The Nuzian specimens happen to be rarely decorated; but when ornamentation was applied, the painters made use of the same spirals and aquatic birds that are known from Billa in such abundance. The third stratum is stamped thereby as unmistakably Hurrian. The popularity of the painted fabrics on our site as contrasted with the mainly undecorated wares of its eastern congener is doubtless attributable to a slight disparity in age. Billa was apparently settled by the Hurrians several generations earlier than Nuzi, the course of these people being certainly from west to east. During the few intervening decades the painting of pottery was gradually given up, while the study of Assyrian was making rapid progress. This would give us an adequate explanation for the presence of numerous inscribed documents at Nuzi as against the comparative illiteracy of Billa 3. To a limited degree, however, writing was employed on our site as well; the stratum has produced a cylinder seal with two typically Hurrian names.

The main facts on the subject being so clear and plain, the above remarks could have been perhaps dispensed with if it were not for the mistaken notion, current in some quarters, that the level under discussion should be assigned to the ninth century B. C. This erroneous interpretation of the ceramic evidence can be traced to a phrase in one of my field reports; it was stated there that the third stratum was found directly under the remains of the period of Ashurnasirpal (level 1 at this par-

³¹ Compare the writer's *Mesopotamian Origins*, chapter V.

³² *BASOR*, 41, page 19. My remark that the pottery in question was 'hitherto unknown, at least so far as Mesopotamia is concerned' (*BASOR*, 41, page 20), was admittedly somewhat cryptic. I was aware, of course, of the fact that the ware had come up sporadically in the district of Nineveh, and I could not have been blind to the Nuzi analogues. What I wished to indicate was that the painted specimens of the period were best represented at Billa 3.

tiular corner of the mound).³² M. Dussaud took this statement to mean that the underlying stratum immediately preceded the Assyrian one in date; the painted fabrics of Billa 3 he would date not earlier than the beginning of the ninth century.³³ It is not necessary to go into great detail in order to refute the arguments of the learned Conservateur of the Louvre. The synchronism with Nuzi does that most effectively. It may be added that in other sections of Billa the second stratum goes back to the period of Shalmaneser I. The painted pottery which immediately precedes would be thus not earlier than the fourteenth century, on the assumption that the strata followed each other at this point without any break in time. That this was not so has already been demonstrated. If additional proof were required, I might mention typical Anatolian terra-cotta figurines, which have been found in close association with the fabrics of Billa 3; some are of the Teshup type, while others represent men clad in short tunics and holding kids or lambs. There is, therefore, no justification whatsoever for attributing the pottery of our third stratum to the Assyrians as M. Dussaud has proposed to do.

The cylinder seals bear out our contention, naturally enough. They are all of the type that M. Contenau terms Syro-Hittite, and they correspond admirably to the seal impressions found on the Nuzi tablets. Moreover, the glyptic material reminds us that the affinities of the Hurrians were with the West, a conclusion that is in complete conformity with the linguistic evidence. In fact, our Hurrians formed the bridge that linked Mesopotamia and Syria with western Asia Minor and the Aegean basin. This is an inevitable deduction from the available ceramic evidence. We have stressed the differences between the pottery of the fourth and the third strata of Billa in the preceding chapter, and further characterization of the Hurrian fabrics (compare especially Plate LXIV) is not essential in the present discussion. The ornamentation of the wares of the third stratum is paralleled in its most important features in Palestine, Syria, Cyprus, and the lands of the Hittites. This is particularly true of the birds and spirals; the best analogies to the Billa dolphins come from Aegean centers where closely related animal figurines are also found. The dotted designs are prevalent throughout. Together

³² *Syria*, 12 (1931), 291 and following.

with this painted decoration we notice the spread of the button-base. There are certainly frequent local variations in shapes; it is instructive, therefore, to place side by side the censer from Billa [Plate LXIII] and a similar cult object from Beisan.⁵² When it came to objects having a religious significance the conservative tendencies that are operative in such cases brought about the retention of the common original types, whether it was in Palestine or in Upper Mesopotamia. More detailed comparisons must be reserved for a future publication.

c. Conclusions

To conclude this discussion of the five lowest levels at Billa, it is evident that none of them represented a people that was indigenous to this section of the country; the same goes for the rest of Mesopotamia as can be seen from the evidence of such early southern sites as Ur and Warka, where analogues of Billa are either totally absent or else witnessed for only brief periods. That the first settlers of Billa (stratum 7) were merely invaders can be demonstrated with the aid of the material from Tepe Gawra; there the chalice folk are definitely recognized as intruders, the event having taken place at a time after Gawra had accumulated as many as fourteen meters of debris and had passed through a long series of earlier and totally dissimilar periods. From Billa 6 onwards we note a succession of further invasions. All of these arrivals appear to come from the north or northeast. Only in the case of Billa 5 we observe a simultaneous influx of cultural stimuli from the south, where the Sumerians are known to have held sway at the time.

The cultural associations of the Assyrians and their successors at Billa are too well known to require any discussion in this connection.

Our finds may be given the form of a final summary in the following chronological table:

| | |
|--|--------------|
| Billa 7-6—Corresponding with the Jemdet Nasr, or | |
| First Predynastic Period of the South: | 3200-2900 |
| Billa 5—Early Dynastic Period: | 2900-2700 |
| Billa 4—Anatolian Period: | about 1900 B |
| Billa 3—Hurrian Period: | 1600-1400 |
| Billa 2—Middle Assyrian: | 1300- 800 |
| Billa 1—Late Assyrian: | 800- 700 |

⁵² Compare Alan Rowe, *Museum Journal*, XVII, page 297.

The dates suggested are, of course, approximate and tentative. The post-Assyrian occupations have not been included in this scheme.³⁷

INDEX OF THE POTTERY IN THE PLATES

The area (compare contour map, Plate LXVII) is indicated following a brief description of each piece. In the case of objects now in the University Museum the catalogue number has been appended.

PLATE

XLVII Contour Map.

XLVIII Stratum 7. Chalice.

1. Chalice—buff ware, cream slip, deep brown painted design. G27. 31-51-593.
2. Chalice—buff ware, cream slip, lustre painted design. G27.

XLIX Stratum 7. Miscellaneous.

1. Cup—buff ware, greyish buff slip. H27.
2. Cup—grey ware, red slip, brown painted lines, hand-made. H27. 32-20-520.
3. Chalice—buff ware, buff slip, deep brown painted design. G27.
4. Bowl—brownish grey ware, hand-made. G27.
5. Cup—brown ware, hand-made. F27.

I. Stratum 6. Chalice.

1. Chalice—greenish grey ware, greenish grey wash. G27.
2. Chalice—grey ware, grey wash. G27.

LI Stratum 6. Bowls and Saucers.

1. Bowl—buff ware, buff slip. G26.
2. Bowl—green ware, green wash. G27.
3. Bowl—grey ware, grey wash. H27.
4. Saucer—light green ware, green wash. G26.
5. Saucer—light green ware, green wash. G27.
6. Bowl—greenish grey ware, greenish grey wash. H27.
7. Bowl—greenish grey ware, greenish grey wash. H27. 32-20-489.
8. Saucer—yellow green ware, yellow green wash. G27.

³⁷ Just as this account is going to press a report has been received from Tell Billa containing the joint announcement by Messrs. Bachir, Gordon, and Piepkörn, of the discovery of an inscribed cup of bronze (Billa 2). The inscription is poorly preserved, but in two lines the legend of *Ših-bu-ni-bī'a* is fairly clear. The probability that Billa represents ancient Shibaniba, which has been maintained by us on the basis of topographical evidence, is now raised to virtual certainty. Farrer proposed the same identification in his *Provinzeinteilung* as early as 1921.

PLATE

LII Stratum 6. Cups and Jar.

1. Cup—grey ware, incised. H27.
2. Cup—greenish grey ware, greenish grey wash. G27.
3. Cup—bluish grey ware. H27.
4. Cup—light bluish grey ware. H27.
5. Cup—greenish grey ware, greenish grey wash. G27. 31-51-482.
6. Cup—greenish grey ware, greenish grey wash. G27. 31-51-480.
7. Cup—drab ware, buff wash, incised. G27. 31-51-590.
8. Cup—grey ware, grey wash. G27. 31-51-440.
9. Cup—buff ware, buff wash. H27. 32-20-495.
10. Jar—greenish grey ware, greenish grey wash. H27.
11. Cup—light green ware, green wash. G27. 31-51-486.
12. Cup—grey ware. H27.

LIII Stratum 6. Jars and Chalice.

1. Jar—dark grey ware, grey wash, incised. G26.
2. Jar—drab ware, grey wash. G27.
3. Chalice—light bluish grey ware, grey wash. H27.
4. Squat pot—buff ware, yellowish cream slip. Tomb 72. 31-51-165.
5. Model jar—buff ware, hand-made. H27. 32-20-499.
6. Squat pot—drab ware, greenish grey slip. Tomb 70. 31-51-159.
7. Pot—brown ware, brown wash. Tomb 71. 31-51-161.

LIV Stratum 5. Cups and Pots.

1. Cup—greenish grey ware. H27. 32-20-491.
2. Cup—yellow ware, yellow wash. G27.
3. Cup—light green ware, light green slip. G27.
4. Cup—light green ware, light green slip. F27.
5. Pot—buff ware, buff wash. H27. 32-20-498.
6. Pot—green ware, green wash. F27.
7. Jar—bluish grey ware, bluish grey wash. H27.
8. Pot—grey ware, grey slip. F26.

LV Stratum 5. Jars.

1. Pot—light green ware, light green wash. F26.
2. Pot—pale yellowish buff ware, cream wash. F26.
3. Storage jar—light green ware, light green wash. F26.
4. Jar—greyish buff ware, buff wash. F26.

PLATE

LVI Stratum 4. Bowls and Saucers.

1. Bowl—light greenish ware, green slip. F26.
2. Bowl—grey ware, grey wash, brown painted design on rim. F24.
3. Saucer—buff ware, buff wash. F26.
4. Bowl—light greenish ware, light greenish slip. F26.
5. Bowl—greenish grey ware, greenish grey wash, brown painted lines on top of rim. F24.
6. Bowl—light green ware, green wash. F26.
7. Bowl—buff ware, pinkish wash. G27.
8. Bowl—greenish grey ware, greenish grey wash. F27.
9. Saucer—greenish grey ware, greenish grey wash, red and black painted design. F24. 32-20-160.

LVII Stratum 4. Cups and Jars.

1. Cup—yellowish ware, cream slip. F26.
2. Cup—grey ware, grey wash. F26.
3. Jar—buff ware, buff wash. F26. 31-51-379.
4. Pot—light greenish ware, light greenish slip. F27.
5. Storage jar—grey ware, grey wash. E25.
6. Cup—greenish grey ware, greenish grey wash. H27.
7. Jar—light green ware, green wash. D26.
8. Pot—buff ware, pinkish cream wash. G27.

LVIII Stratum 4. Tomb 42.

1. Bowl—greenish grey ware, greenish grey wash. 31-51-116.
2. Pot—greenish grey ware, greenish grey wash.
3. Bowl—buff ware, buff wash.
4. Pot—buff ware, red and yellow slip. 31-51-119.
5. Bowl—greenish grey ware, greenish grey wash. 31-51-117.
6. Pot—greenish grey ware, greenish grey slip. 31-51-121.
7. Jar—greenish grey ware, partly burnished.
8. Jar—greenish grey ware, greenish grey slip. 31-51-124.
9. Jar—buff ware, cream slip, vertically burnished. 31-51-125.

LIX Stratum 4. Tombs 48 and 61.

1. Jar—buff ware, buff wash, red painted bands. Tomb 61.
2. Bowl—buff ware, cream slip, red painted strokes around rim. Tomb 48. 31-51-136.
3. Bowl—buff ware, buff wash, brown painted design. Tomb 61. 31-51-149.
4. Jar—buff ware, cream slip, black and bistre painted design. Tomb 61. 31-51-151.
5. Pot—buff ware, cream slip, black painted design. Tomb 48.

PLATE

LX Stratum 3. Cups and Bowl.

1. Cup—light greenish ware, greenish slip, dark brown painted bands. F27.
2. Cup—buff ware, buff wash, reddish brown painted bands. H27.
3. Bowl—buff ware, light greenish slip, brown painted design. H27.
4. Cup—buff ware, buff wash, reddish brown painted bands—one inside of rim. F25.
5. Cup—buff ware, cream slip, brown painted bands. E25.
6. Cup—greenish grey ware, greenish grey wash, red painted bands. E25.

LXI Stratum 3. Footed Goblets.

1. Footed goblet—buff ware, buff wash, white painted design on bistre band. E24. 32-20-100.
2. Footed goblet—buff ware, buff slip, brown painted design. H27.
3. Footed goblet—buff ware, buff wash, white painted design on red bands. D23. 31-51-289.
4. Footed goblet—drab ware, cream slip, white painted design on black bands. E24.
5. Footed goblet—buff ware, buff wash, whitish grey painted design on brown bands. D23. 31-51-580.
6. Footed goblet—buff ware, cream slip, cream painted design on brown bands. R10.

LXII Stratum 3. Miscellaneous.

1. Dish—green ware, green wash. E24.
2. Dish—red ware. E24.
3. Dish—buff ware. E24.
4. Model jar—greenish buff ware, brown painted bands. K26. 32-20-107.
5. Cup—greenish grey ware, brown painted bands. K26.
6. Amphora—reddish buff ware, cream slip, burnished, two apouts on base. E24.
7. Jar—buff ware, buff slip, red painted design. R7.
8. Jar—pale buff ware, cream wash, reddish brown painted design. Q10. 32-20-327.

LXIII Stratum 3. Censer.

Buff ware, black and bistre painted design. E25. 32-20-113.

LXIV Stratum 3. Painted Designs.

PLATE

LXV Stratum 2. Miscellaneous.

1. Bowl—red ware. S7.
2. Bowl—greenish grey ware. T8.
3. Bowl—greenish grey ware. S8.
4. Bowl—greenish grey ware. U7.
5. Cup—light greenish grey ware.
6. Jar—greenish grey ware. U6.
7. Pedestal incense holder—greenish gray ware, greenish cream slip. E25. 31-51-185.
8. Storage jar—buff ware, greenish grey wash. U7.

LXVI Stratum 1. Miscellaneous.

1. Bowl—greyish buff ware. T13. 32-20-225.
2. Saucer—buff ware. R11. 32-20-223.
3. Saucer—grey ware. Q10.
4. Bowl—grey ware, grey wash. S13.
5. Saucer—buff ware, greyish wash. V7.
6. Jar—reddish buff ware, greyish wash. V7.
7. Jar—greenish grey ware. W12.
8. Jar—light red ware, light red wash. E23.

LXVII Post-Assyrian. Miscellaneous.

1. Bowl—silver glaze. S11.
2. Bowl—light green glaze. U6. Tomb 319. 32-20-189.
3. Pilgrim flask—greenish grey ware, greenish grey wash. S13. Tomb 156. 32-20-50.
4. Bottle—buff ware, red slip. S11. Tomb 235.
5. Jar—bluish green glaze. T12. Tomb 164. 32-20-56.
6. Pitcher—buff ware, traces of black paint on shoulder and neck. R13. Tomb 247.
7. Pitcher—reddish buff ware, brown paint on upper part. T11. Tomb 258. 32-20-127.

LXVIII Post-Assyrian. Amphorae and Jugs.

1. Jug—buff ware, red slip on upper part. S13. Tomb 277.
2. Jug—buff ware, buff wash. R11. Tomb 263.
3. Amphora—buff ware, reddish buff wash, incised and appliqued. T11. Tomb 208.
4. Amphora—bluish green glaze. R13. 32-20-229.

LXIX Stratum 7. Painted Potsherds.

LXX Stratum 6. Incised Potsherds.

LXXI Stratum 6. Incised Potsherds.

LXXII Stratum 4. Painted Potsherds.

RESULTS OF TESTS ON SELECTED POTTERY SPECIMENS

The following tables are taken from a report submitted by Mr. R. M. Berry, of the firm of Smith, Rudy & Company, Philadelphia, analytical chemists. Specimens 1-2 are from the seventh stratum, 3-4 from the third stratum of Billa. 1 and 3 contained red decorations, while 2 and 4 were painted in black. The samples were tested for pigment, body clay, and fusion points.

SAMPLE NO. 1

| Tested for | Pigment—% | Body Clay—% |
|--|-----------------------|----------------------|
| Water of Combination | None | 3.58 |
| Silica | 47.80 | 44.00 |
| Iron Oxide (Fe_2O_3) Ferric Oxide | 7.00 | 5.00 |
| Magnetic Oxide (Fe_3O_4) | None | None |
| Alumina (Al_2O_3) | 10.00 | 11.95 |
| Titanium Oxide (TiO_2) | 1.00 | .65 |
| Lime (CaO) | 13.34 | 18.12 |
| Magnesia (MgO) | 4.32 | 4.42 |
| Alkalies as Potassium Oxide (K_2O) | 16.54 (By Difference) | 2.92 (By Difference) |
| Carbon Di-Oxide (CO_2) | None (By Difference) | 9.36 |
| Sulphur Tri-Oxide (SO_3) | None | None |

FUSION TESTS

| | | |
|---------------------------|----------|------------------|
| Initial Deformation Point | Not Done | 2124° Fahrenheit |
| Fusing Point | Not Done | 2165° Fahrenheit |

SAMPLE NO. 2

| Tested for | Pigment—% | Body Clay—% |
|--|----------------------|----------------------|
| Water of Combination | None | 1.25 |
| Silica (SiO_2) | 47.80 | 48.44 |
| Iron Oxide (Fe_2O_3) Ferric Oxide | None | 8.57 |
| Magnetic Oxide (Fe_3O_4) | 11.77 | None |
| Alumina (Al_2O_3) | 16.03 | 15.53 |
| Titanium Oxide (TiO_2) | .50 | .50 |
| Lime (CaO) | 13.65 | 15.17 |
| Magnesia (MgO) | 5.24 | 7.70 |
| Alkalies as Potassium Oxide (K_2O) | 5.01 (By Difference) | 1.65 (By Difference) |
| Carbon Di-Oxide (CO_2) | None | 1.19 |
| Sulphur Tri-Oxide (SO_3) | None | None |

FUSION TESTS

| | | |
|---------------------------|----------|------------------|
| Initial Deformation Point | Not Done | 2124° Fahrenheit |
| Fusing Point | Not Done | 2165° Fahrenheit |

SAMPLE NO. 3

| Tested for | Pigment—% | Body Clay—% |
|--|-----------------------|----------------------|
| Water of Combination | None | 2.77 |
| Silica (SiO_2) | 14.20 | 49.32 |
| Iron Oxide (Fe_2O_3) Ferric Oxide | 7.50 | 7.43 |
| Magnetic Oxide (Fe_3O_4) | None | None |
| Alumina (Al_2O_3) | 39.50 | 14.42 |
| Titanium Oxide (TiO_2) | 1.00 | .75 |
| Lime (CaO) | 10.66 | 13.20 |
| Magnesia (MgO) | 7.70 | 5.36 |
| Alkalies as Potassium Oxide (K_2O) | 19.44 (By Difference) | 4.84 (By Difference) |
| Carbon Di-Oxide (CO_2) | None | 1.91 |
| Sulphur Tri-Oxide (SO_2) | None | None |

FUSION TESTS

| | | |
|---------------------------|----------|------------------|
| Initial Deformation Point | Not Done | 2124° Fahrenheit |
| Fusing Point | Not Done | 2165° Fahrenheit |

SAMPLE NO. 4

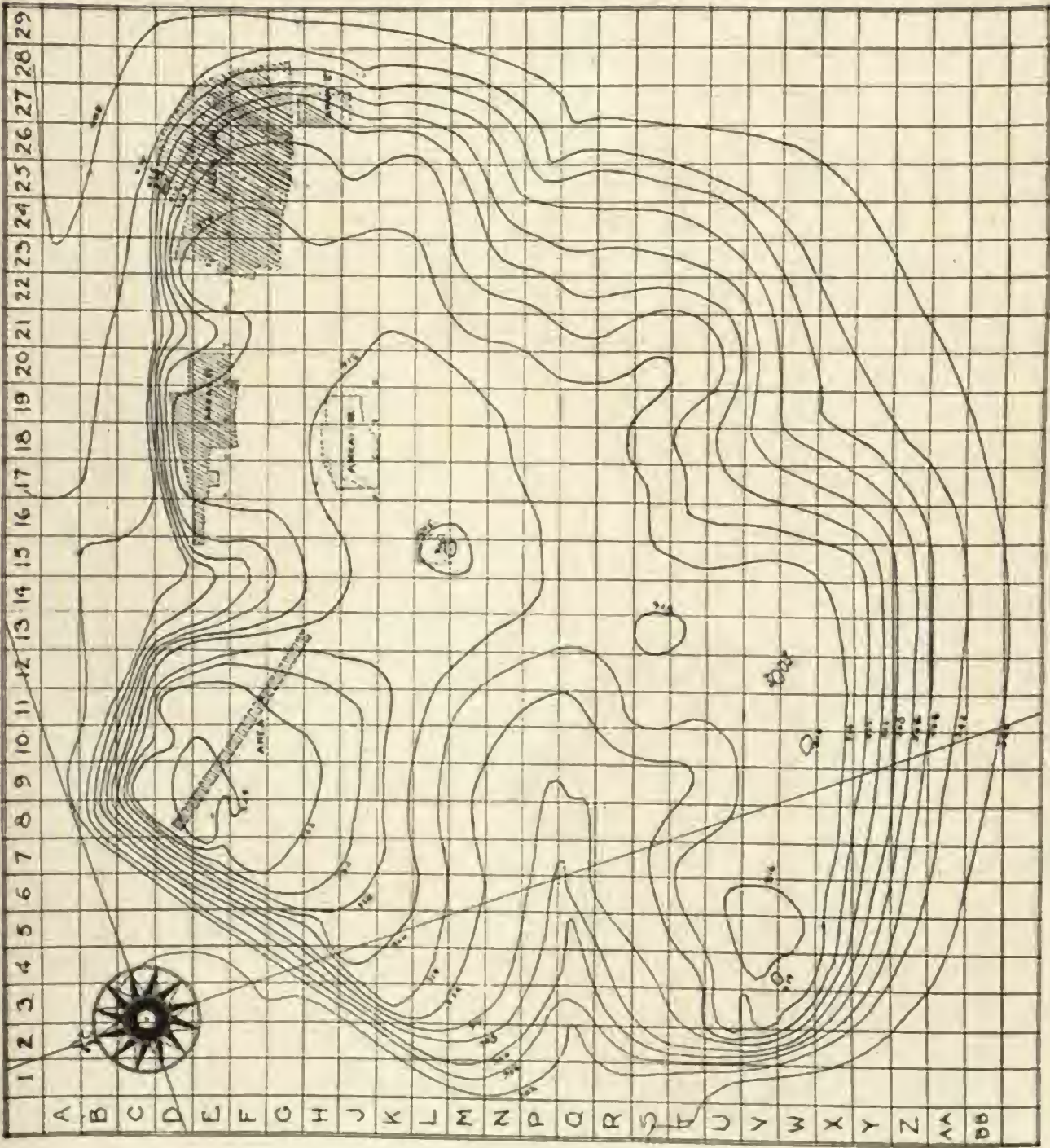
| Tested for | Pigment—% | Body Clay—% |
|---|----------------------|----------------------|
| Water of Combination | None | 1.60 |
| Silica (SiO_2) | 50.24 | 45.48 |
| Iron Oxide (Fe_2O_3) Ferric Oxide | None | 7.57 |
| Magnetic Oxide (Fe_3O_4) | 7.50 | None |
| Alumina (Al_2O_3) | 20.10 | 14.58 |
| Titanium Oxide (TiO_2) | 1.00 | .65 |
| Lime (CaO) | 10.66 | 19.15 |
| Magnesia (MgO) | 6.48 | 5.40 |
| Alkali as Potassium Oxide (K_2O) | 4.02 (By Difference) | 1.57 (By Difference) |
| Carbon Di-Oxide (CO_2) | None | 4.00 |
| Sulphur Tri-Oxide (SO_2) | None | None |

FUSION TESTS

| | | |
|---------------------------|----------|------------------|
| Initial Deformation Point | Not Done | 2124° Fahrenheit |
| Fusing Point | Not Done | 2165° Fahrenheit |

It will be seen at a glance that the composition of the pigments differed little from that of the body clays. It is also interesting to note that the materials and technique of the pot-painters of 3000 B. C. had not undergone any appreciable change by 1500 B. C.

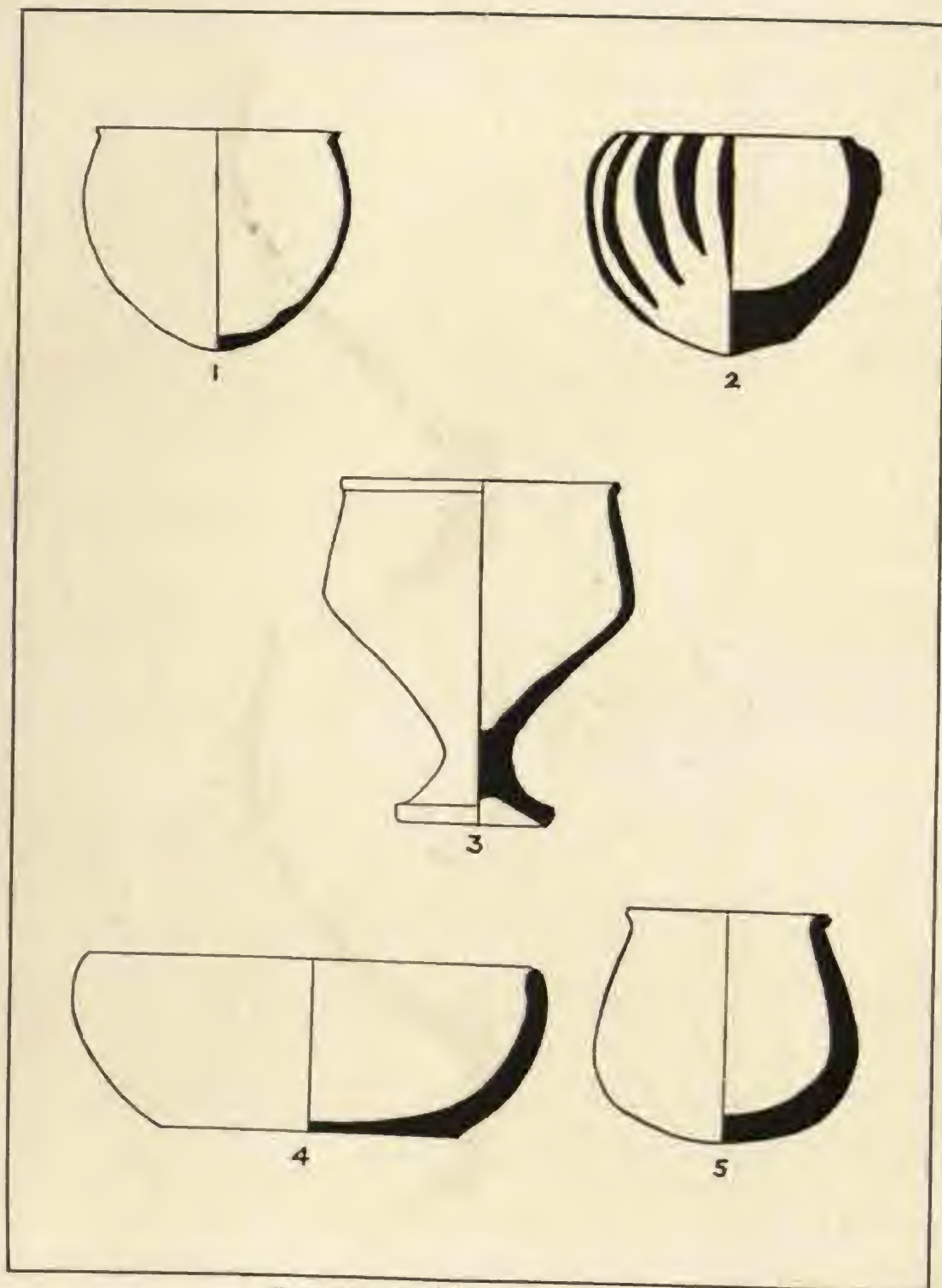
The firing temperature may be set down in all four cases as close to 1600° Fahrenheit. This conclusion is based on the percentages of carbon dioxide found in the body clays (none in the pigments). Calcium carbonate does not begin to decompose into calcium oxide and carbon dioxide until a temperature of 1537° Fahrenheit has been reached.



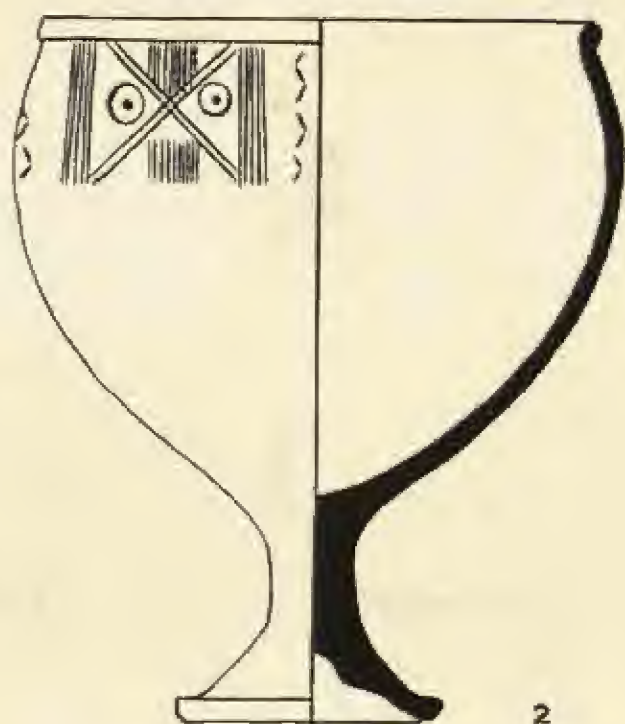
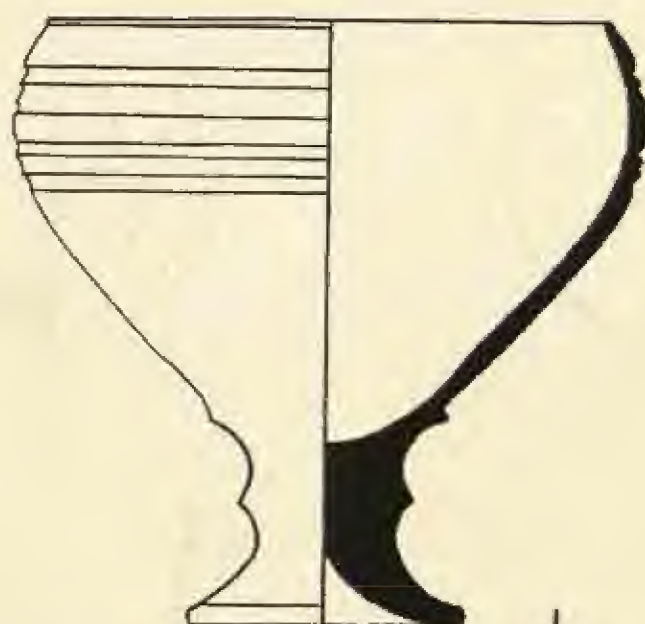
CONTOUR MAP OF THE SITE OF TELL BILLA



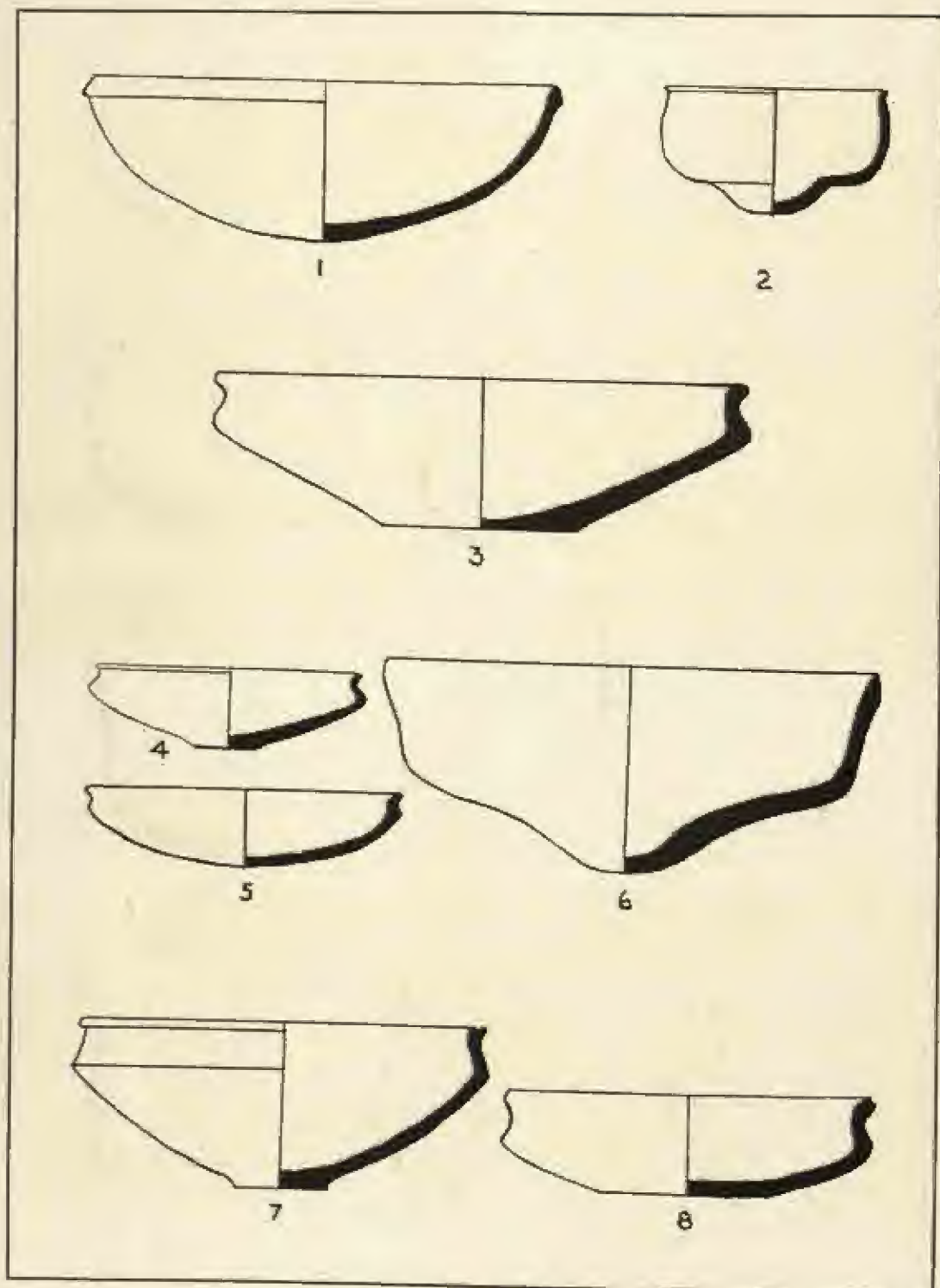
STRATUM 7. SCALE 2/3



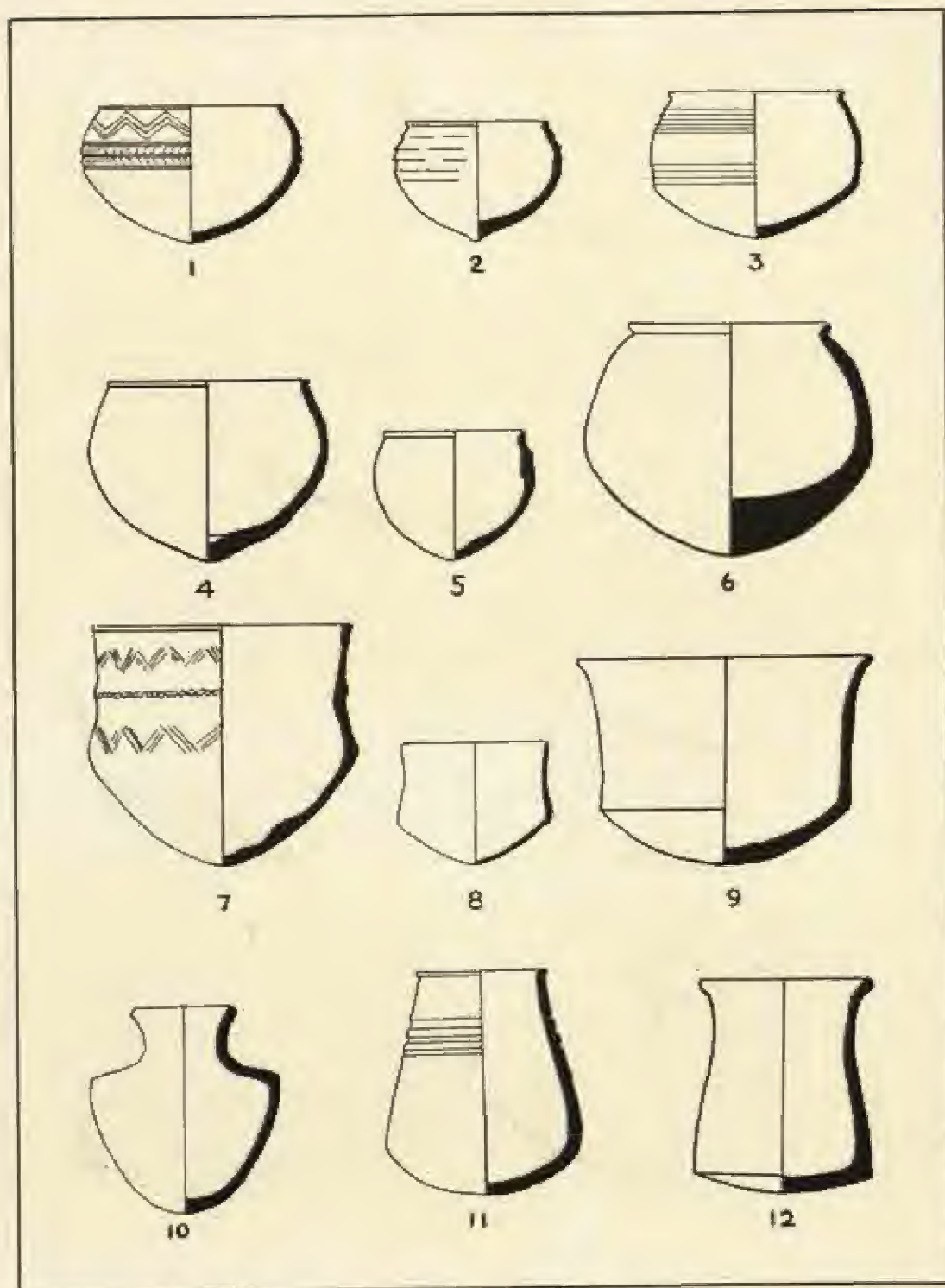
STRATUM 2, SCALE 2/5 — NUMBER 2 = 1/1



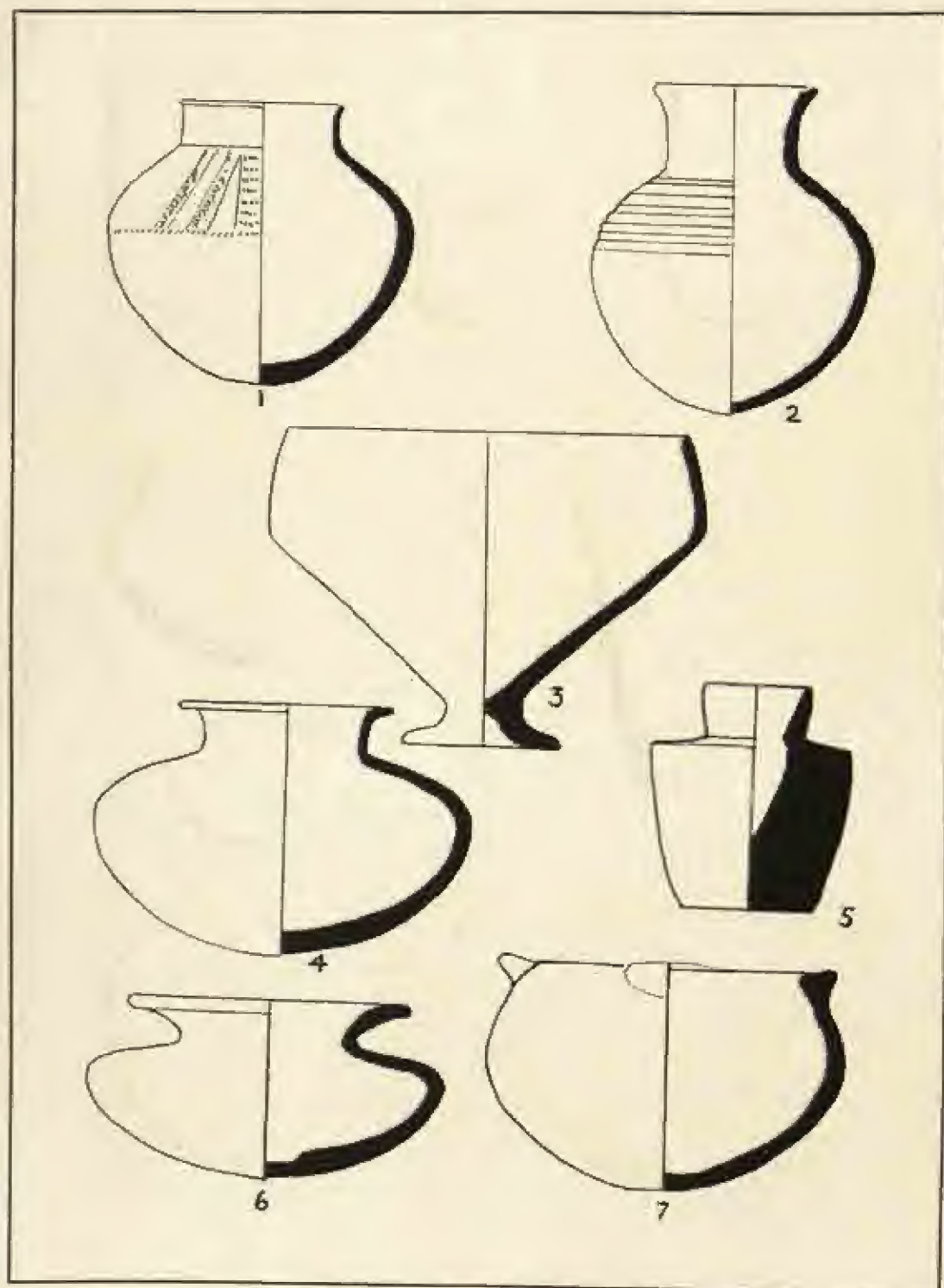
STRATUM 6. INCISED CHALICES. SCALE 2/3



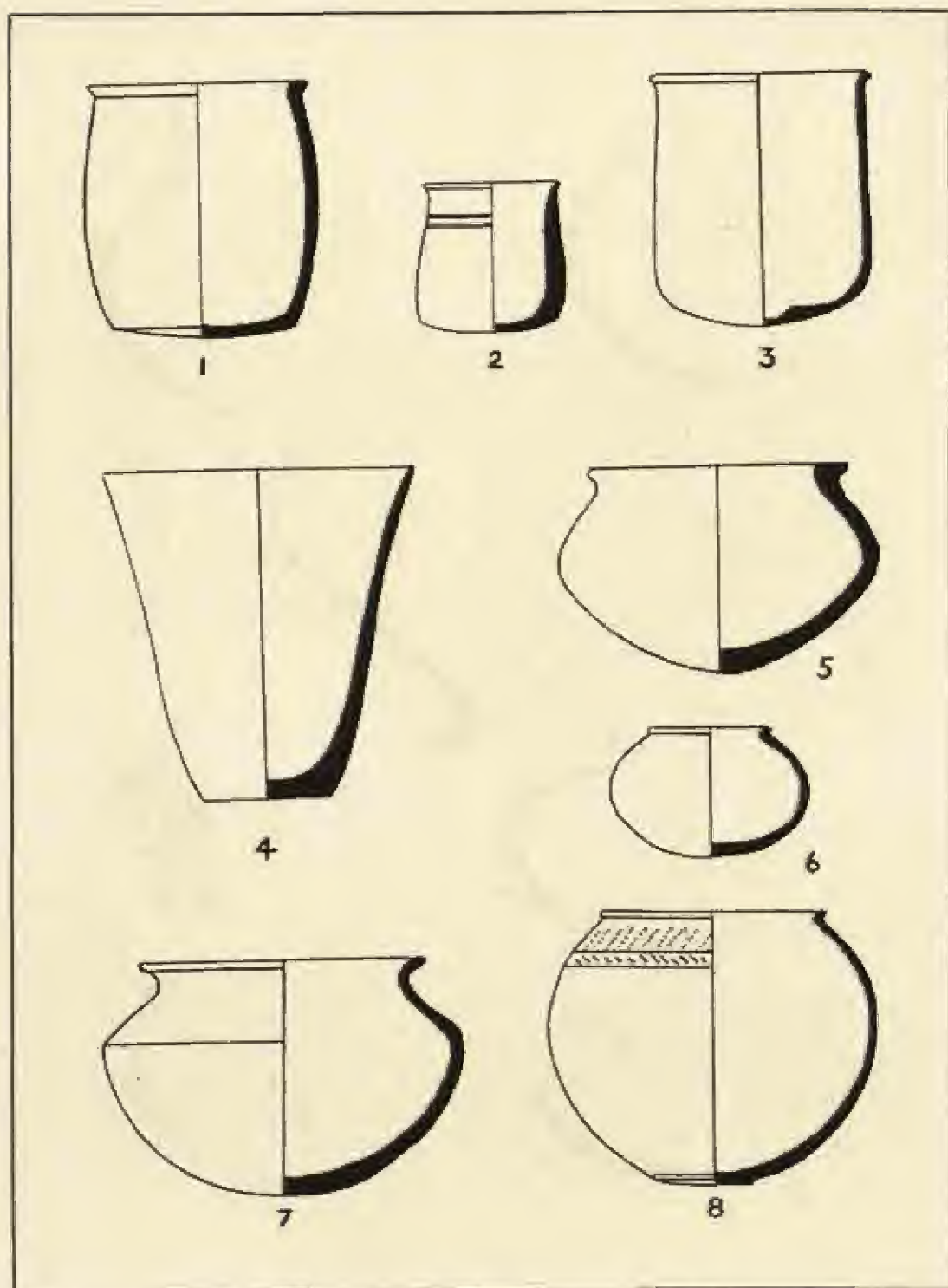
STRATUM 6. Sema 2/5



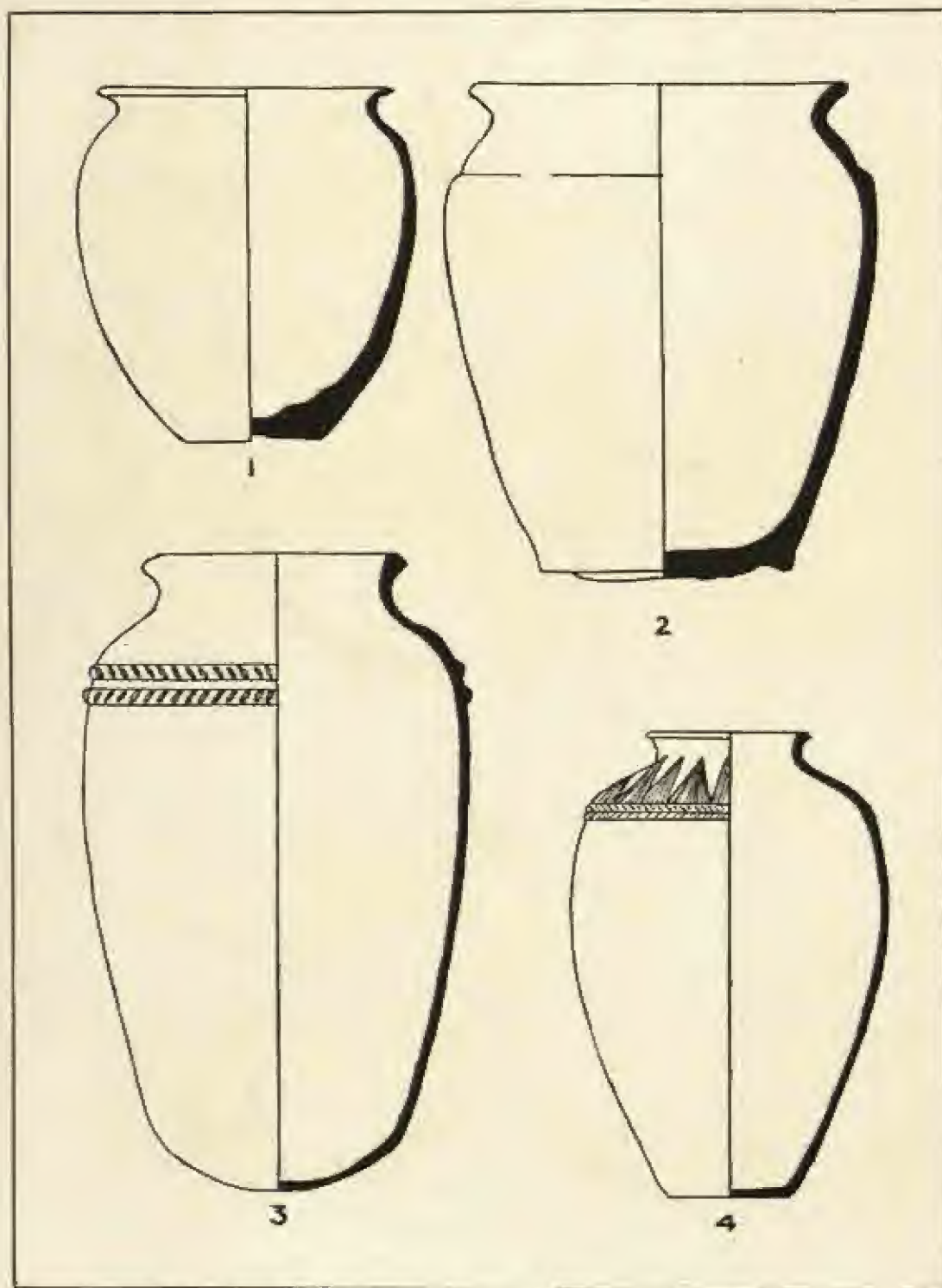
STRATUM 6, SCALE 2/5 — NUMBER 6 = 1/4



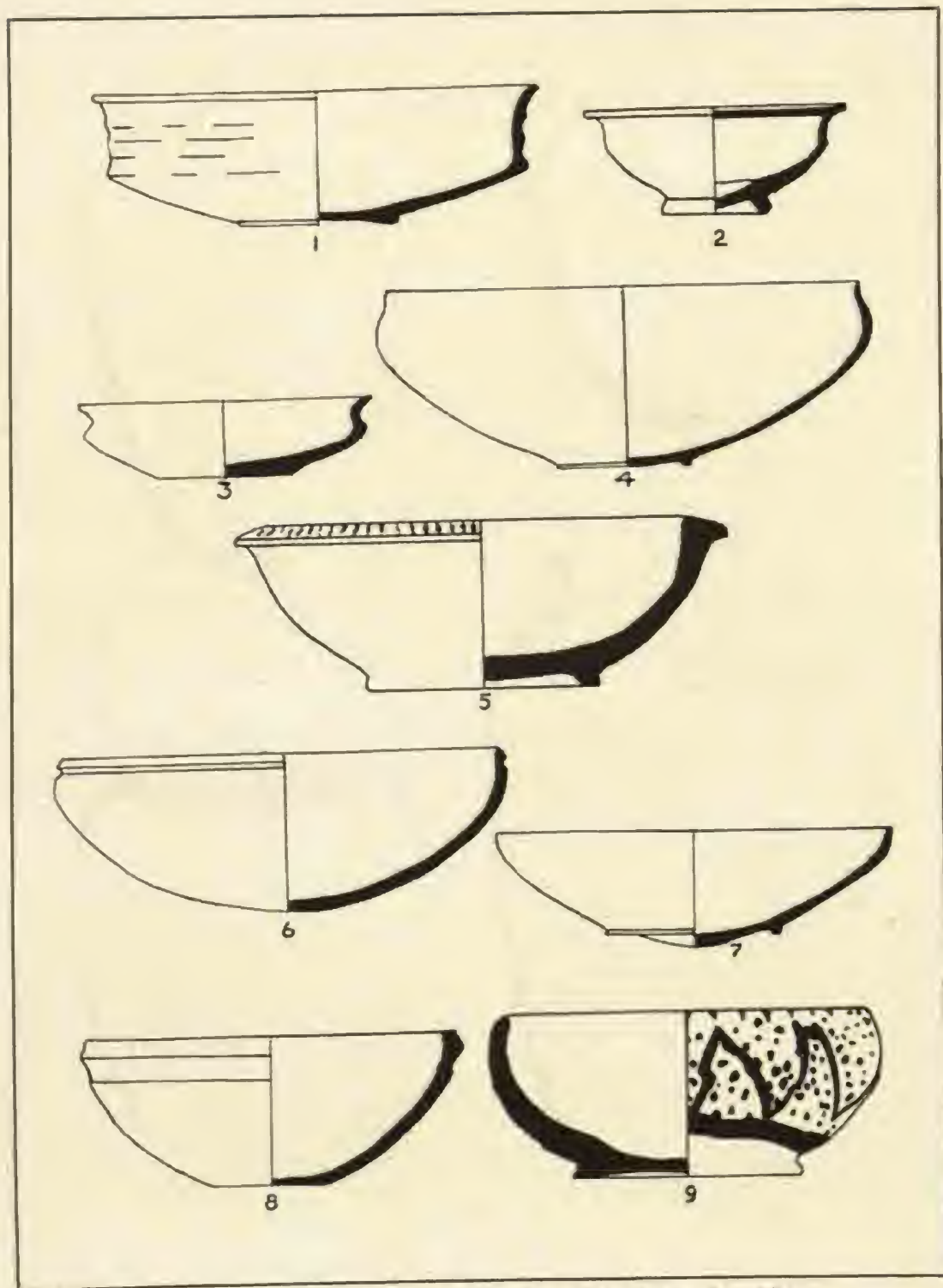
STRATUM 6. SCALE 2/3 — NUMBER 5 = 1/1



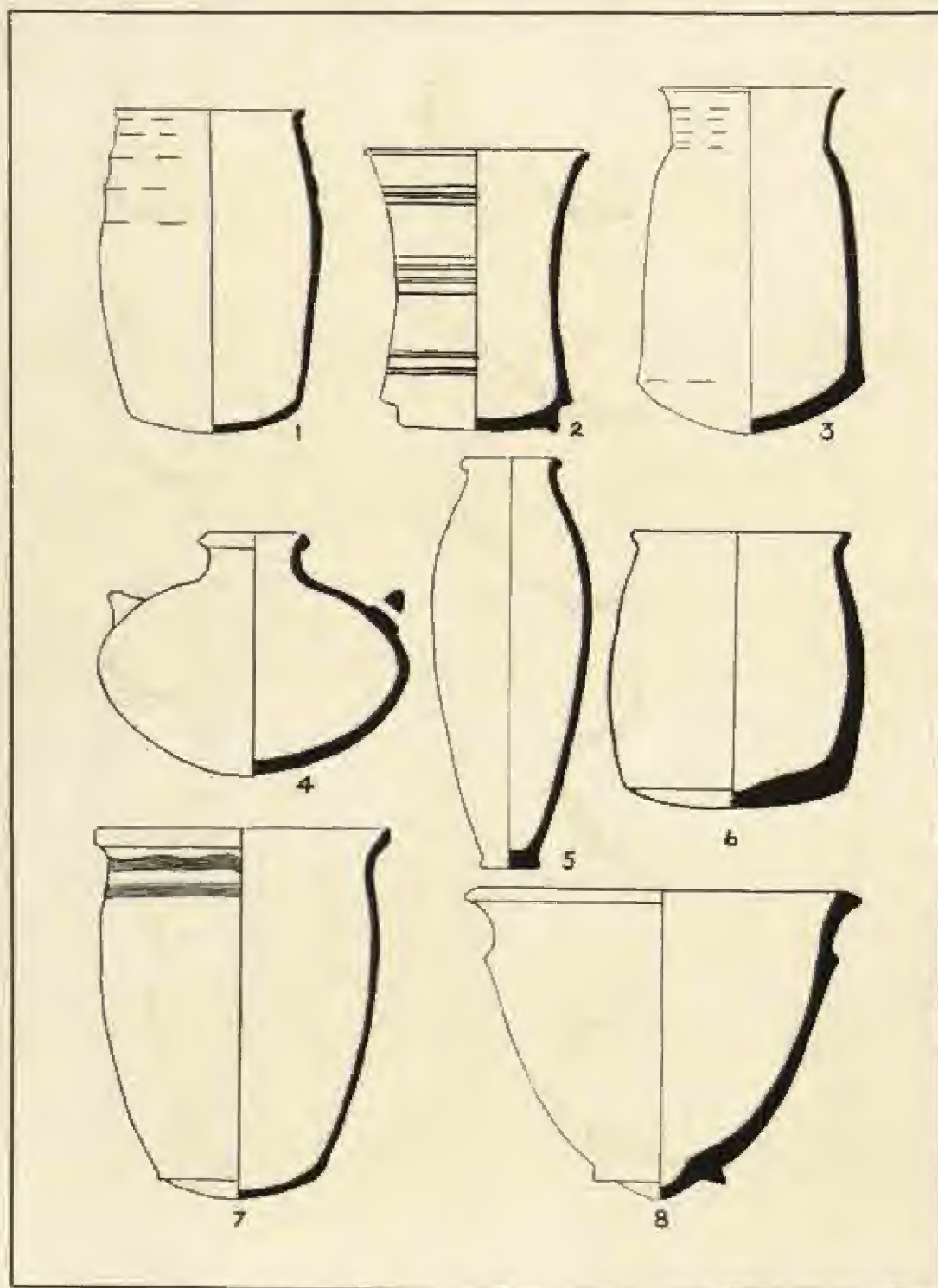
STRATUM 5. SCALE 2/3 — NUMBER 5 = 1/1



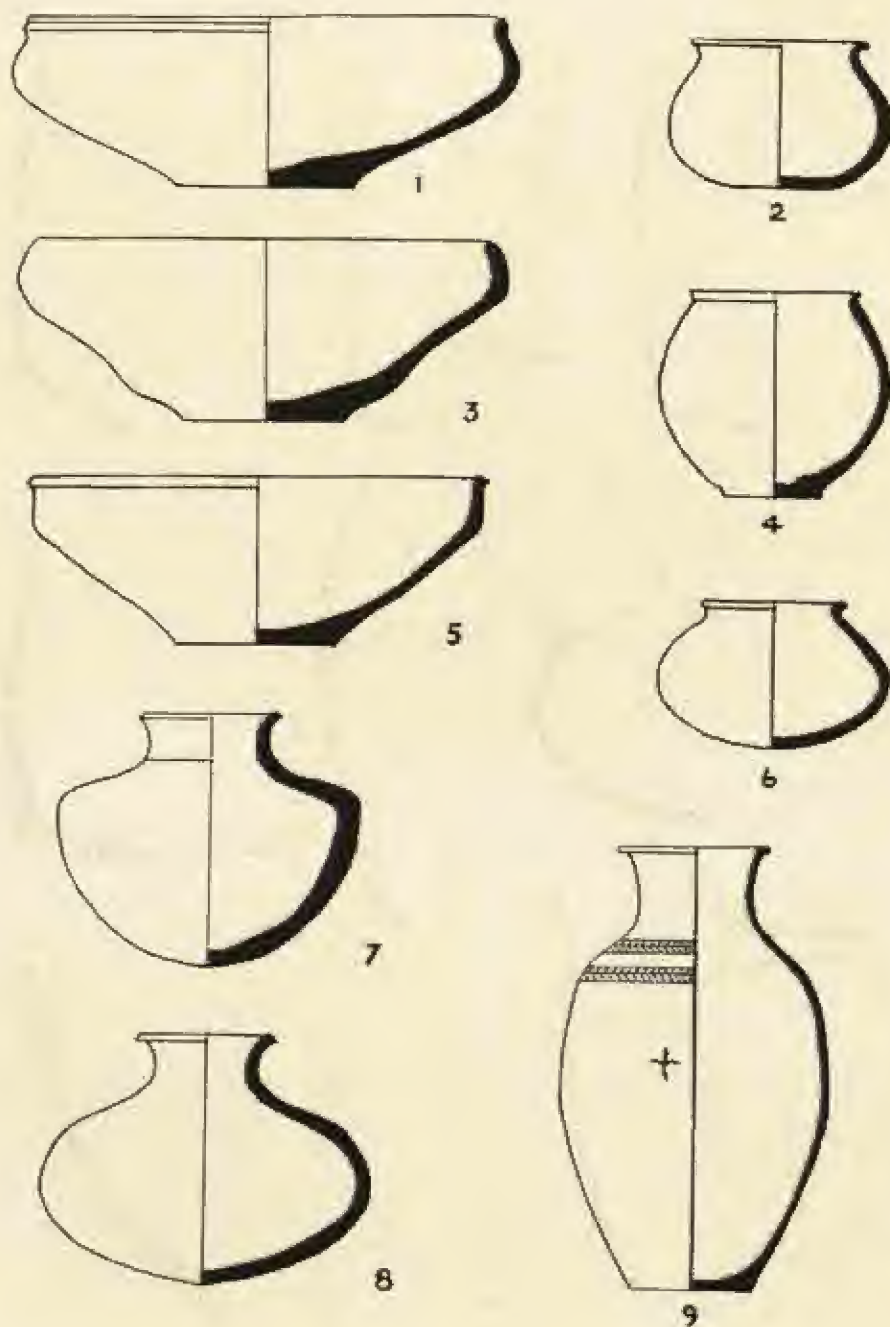
STRATUM 5. SCALE: NUMBERS 1, 2 = 2/5; NUMBERS 3, 4 = 1/10



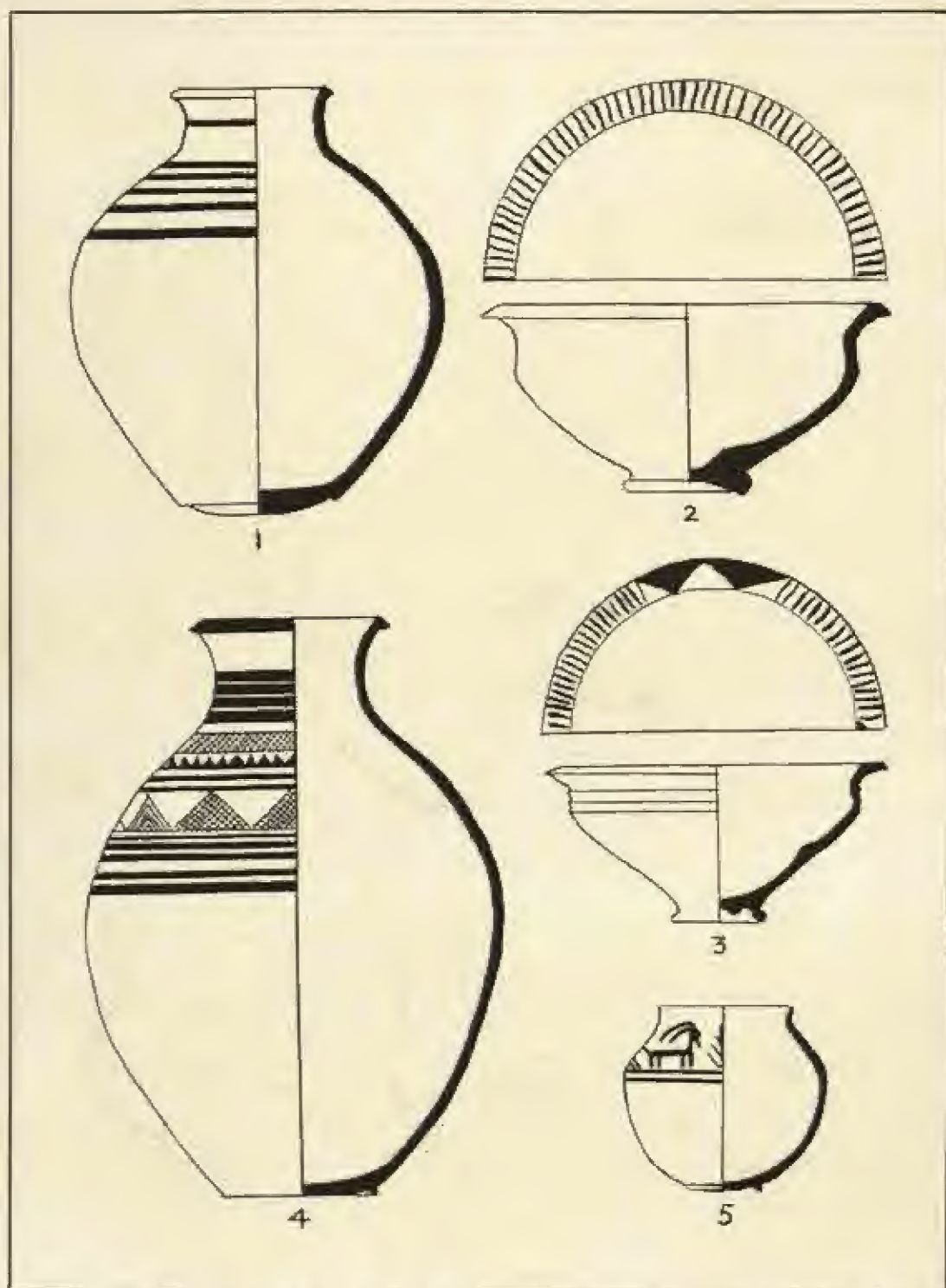
STRATUM 4. SCALE 2/5 — NUMBER 8 = 1/5; NUMBER 9 = 1/1



SERAPUM 4, SCALE $\frac{2}{5}$ — NUMBER 7. = $\frac{1}{5}$; NUMBER 5 = $\frac{1}{10}$



STRATUM 4, TOMB 12. SCALE 2/3 — NUMBER 9 = 1/5



STRATUM 4. TONES 48, 6L. SCALES: NUMBERS 1, 4 = 1/5; NUMBERS 2, 3, 5 = 2/5



1



2



3



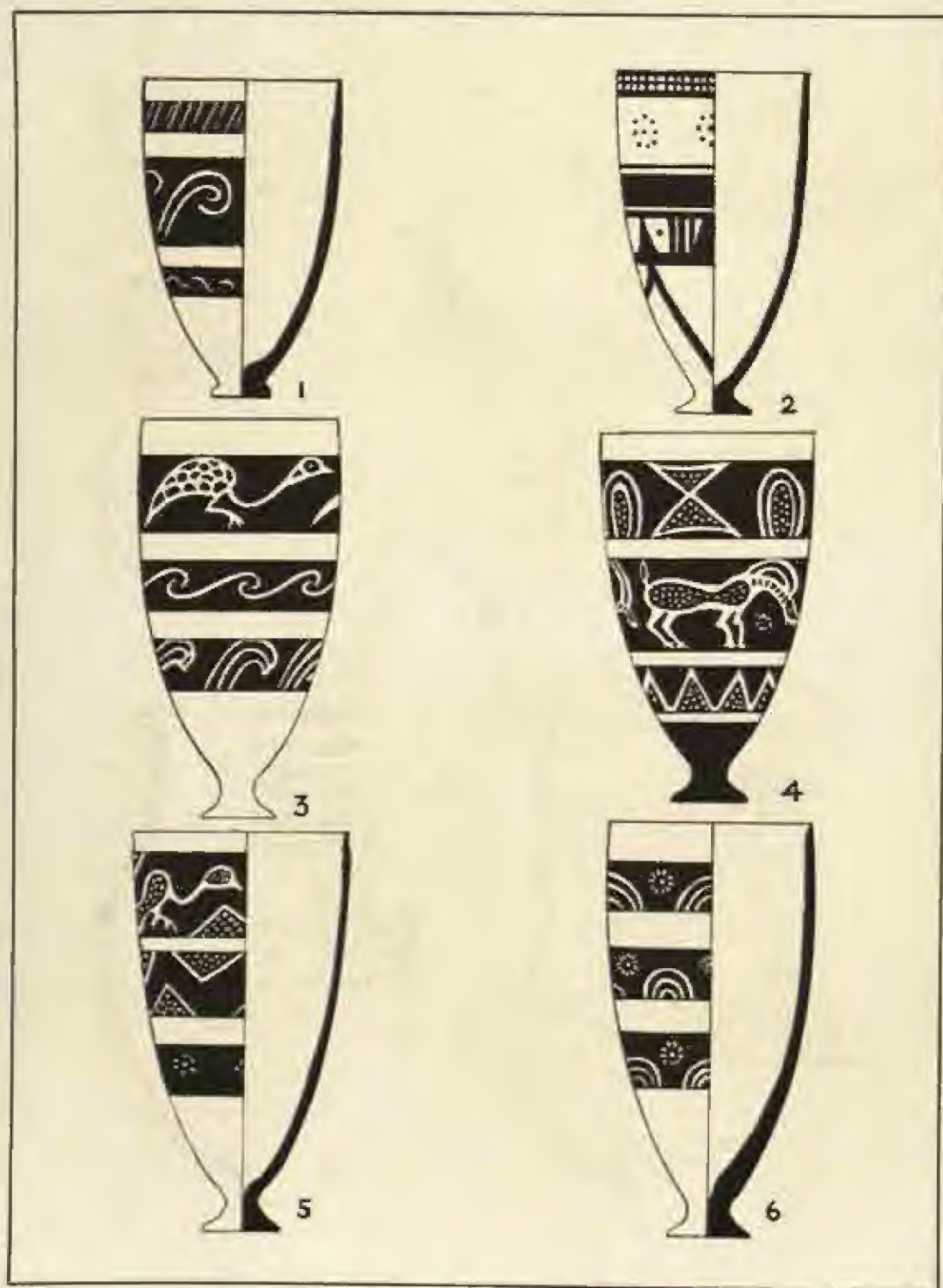
4



5



6



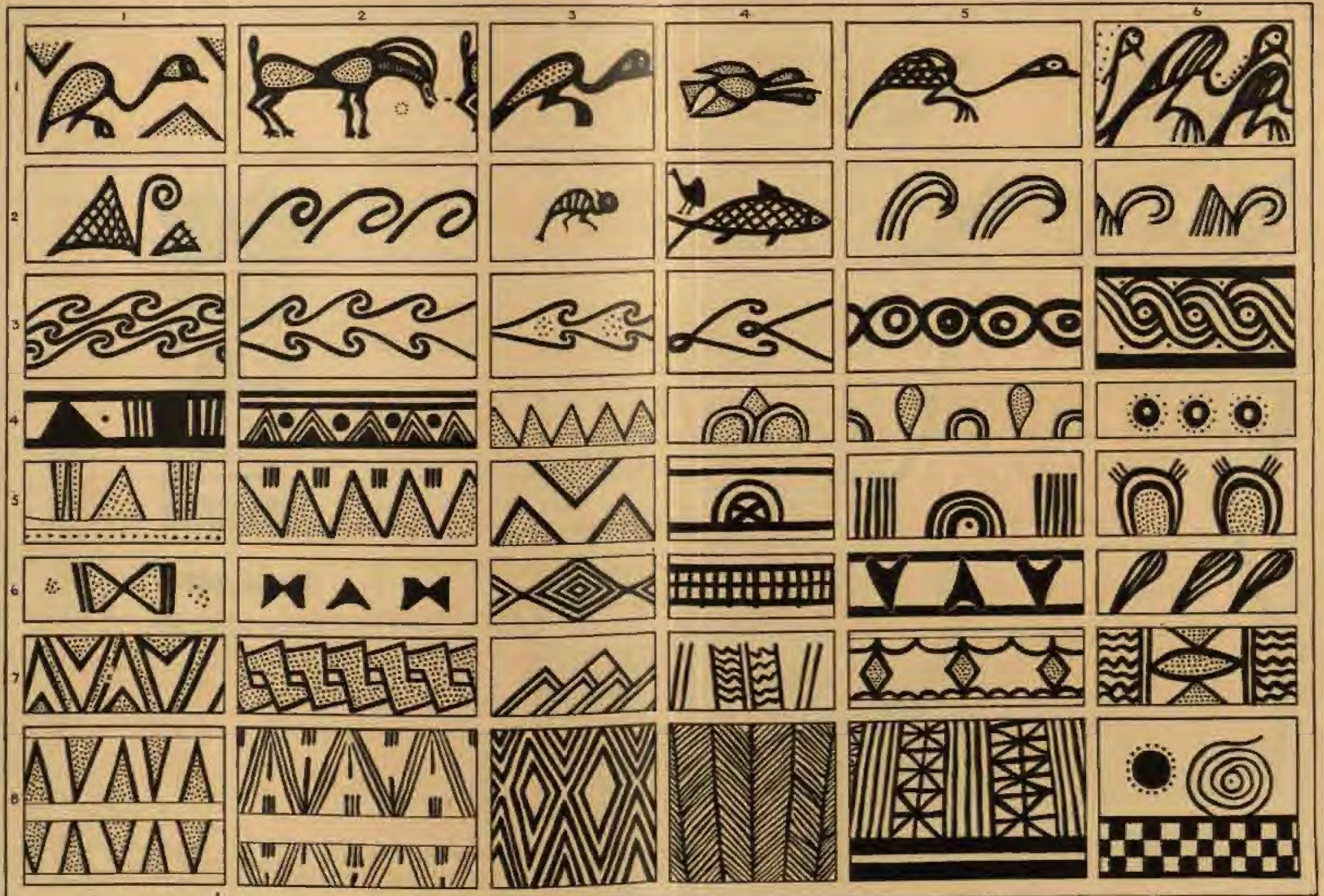
STRATUM 3. SCALE 2/5



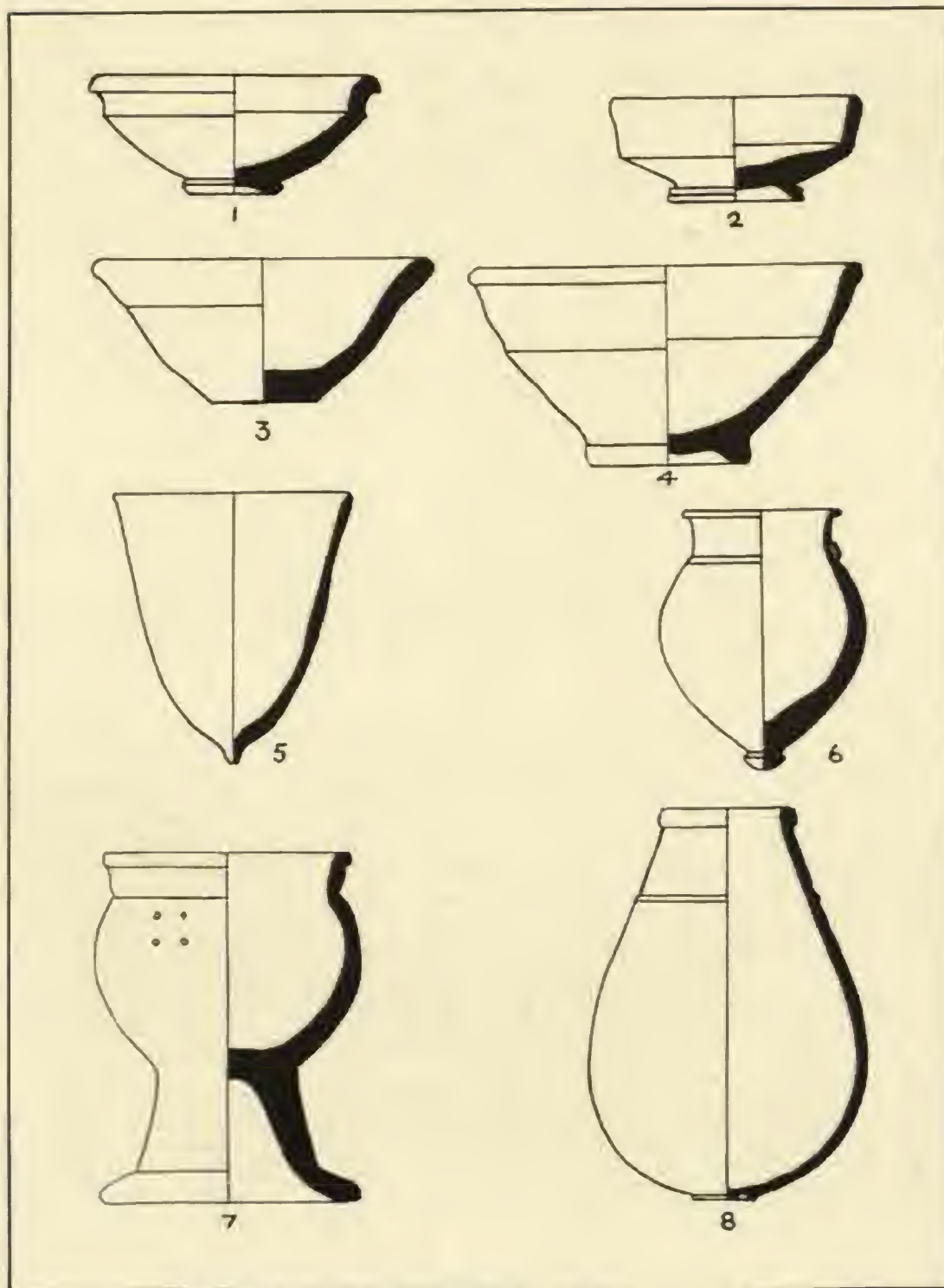
STRATUM 3. SCALE 2/3 — NUMBER 6 = 1/5



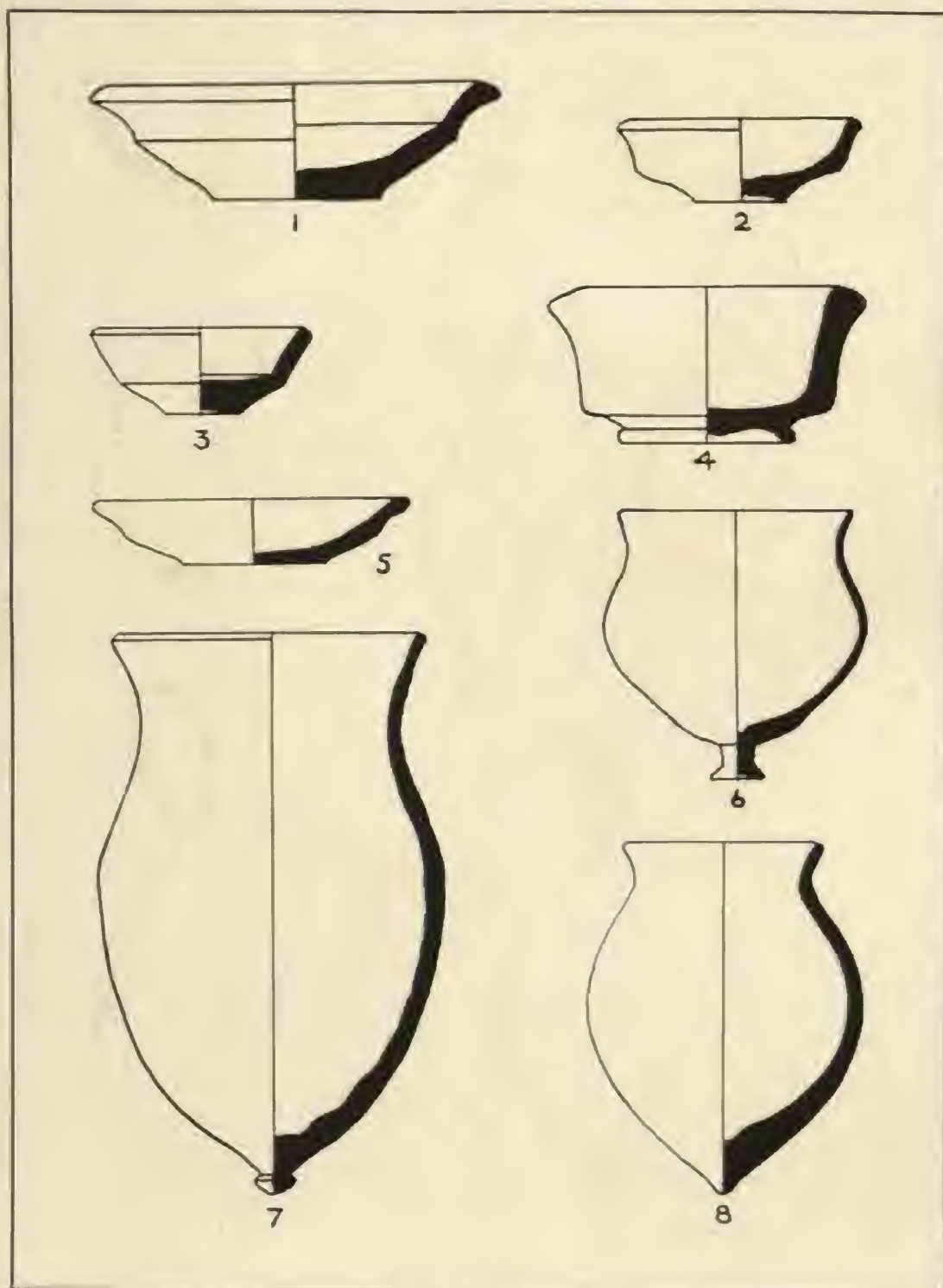
SIRATUM 3, PAINTED CENSER. SCALE 1/5



SECTION 3. PAINTED DESIGNS



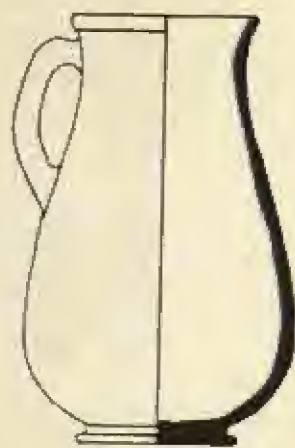
STRATUM 2. SCALE 2/5 — NUMBER 8 = 1/10



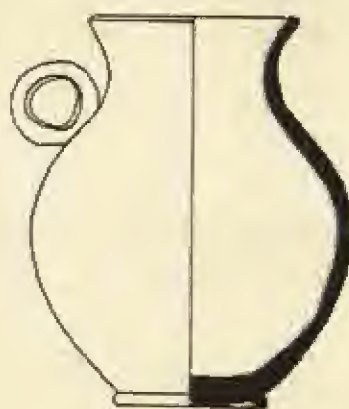
STRATUM I. Scale 2/5



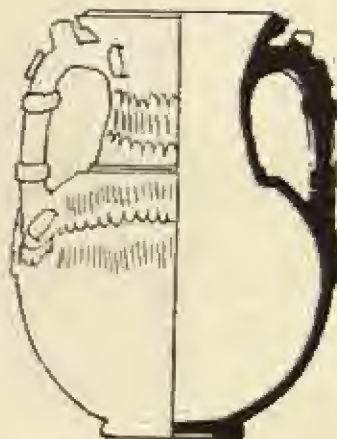
POST ASSYRIAN WARE. SCALE 2/3



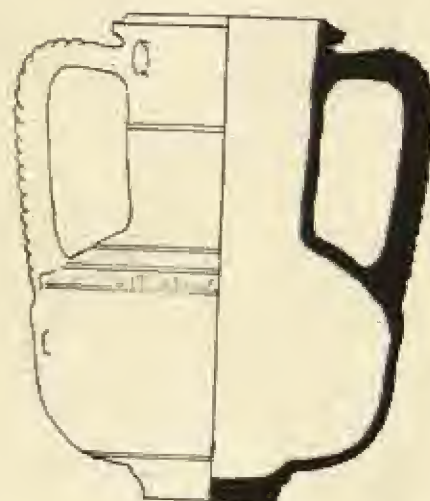
1



2



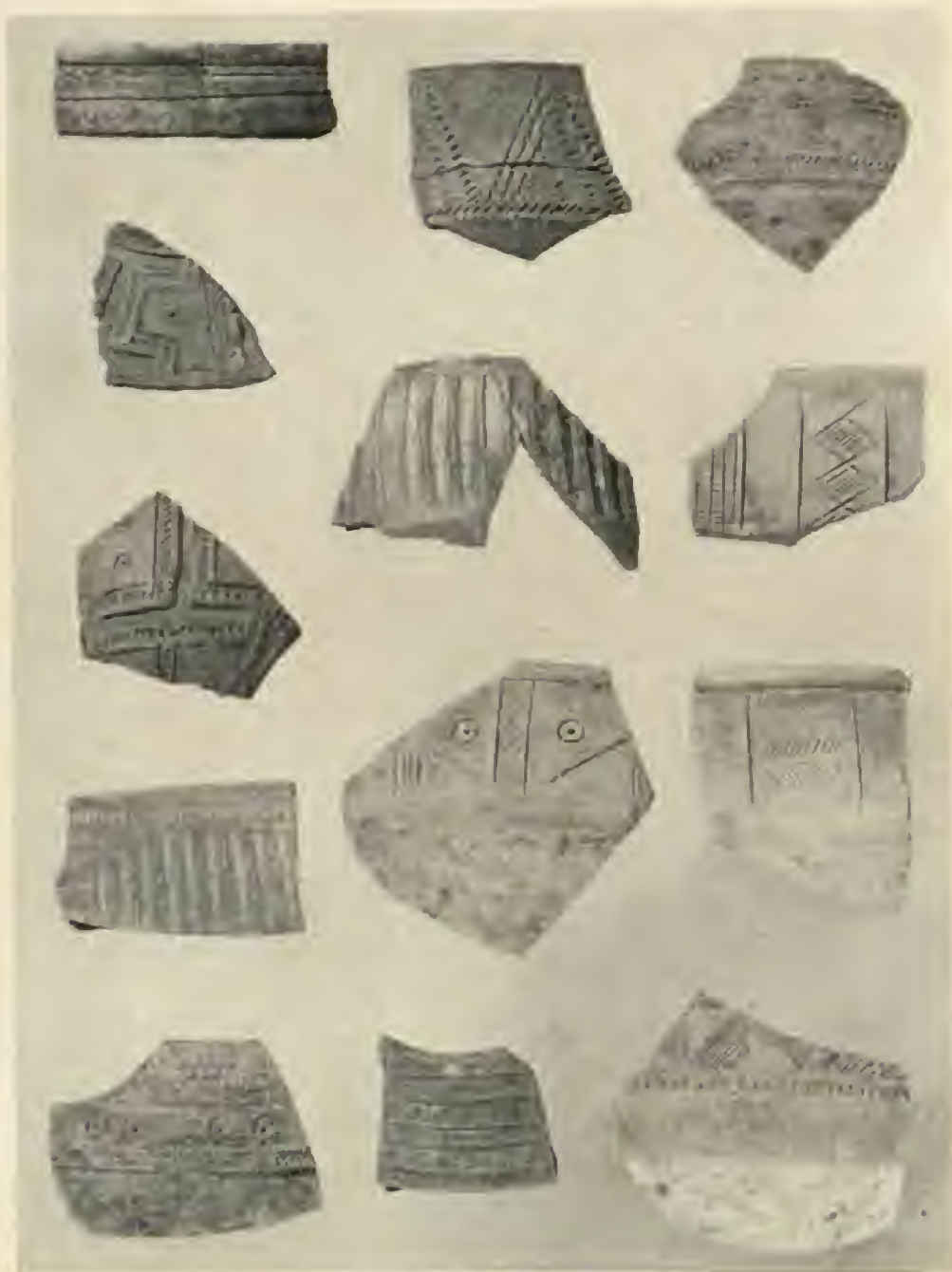
3



4



STRATUM 7. PAINTED POTSDERDS.



STRATUM 6. INCISED POTSHERDS



STRATUM 6, INDUS POTTERIES



STRATUM 4. PAINTED POTTERIES

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Errata

Plate CLXIX, B, Obverse and Reverse, etc.

Plate CXX, A, Scale H 452, H 775 - 1:8; H 166 - 1:12 and 1:24

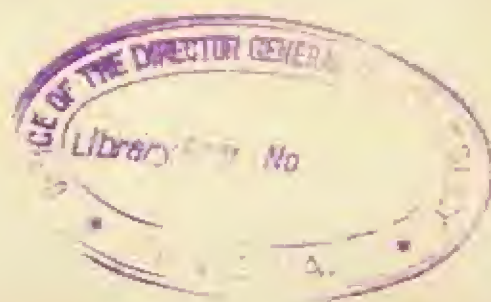
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E. F. SCHMIDT

THE MUSEUM JOURNAL

VOLUME XXIII — NUMBER 4 — 1933

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FOREWORD

It is our pleasant duty to express gratitude to the patrons, counsellors, and friends of the Expedition, whose constant interest made it possible to bring the work to a satisfactory conclusion.

In the United States, the two supporting museums, the University Museum and the Pennsylvania Museum of Art cooperated in an ideal manner with the field staff. To Mrs. William Boyce Thompson our gratitude is due in the fullest possible measure: her generosity not alone enabled the Expedition to work during the first season on a more efficient basis than would have been otherwise possible, but her continued kindness assured the continuity of the operations at Damghan until the end. To Mrs. William H. Moore, our thanks are also due for signal assistance at a critical juncture, as well as to Miss Caroline Sinkler, Mrs. William K. du Pont, Miss Mary Helen Warden, and Miss Louise D. Catherwood, and to Mrs. Christian Holmes through the American Institute for Persian Art and Archaeology, which entered into participation with the Museums during the final phases of the Expedition's work. To the Baron and Baroness de Schanensee, to Mrs. James M. R. Sinkler, to Mr. W. Hinckle Smith, to Mr. Wright S. Ludington, and to the late Mr. Frank Battles we wish to mark our gratitude for support in launching the venture.

For valuable advice and willing cooperation it is particularly desired to extend thanks to Mr. Wallace Murray of the Department of State, to the writer's esteemed professors of anthropology and human morphology, Franz Boas and Bruno Oettking; to Dr. A. V. Kidder, always ready to help and advise; to Dr. A. V. Williams Jackson, the pioneer in our field; and Mr. Arthur Upham Pope, whose familiarity with the varied problems was of great value to the Expedition, both in Persia and in this country.

Our acknowledgements are due many in Persia: His Majesty Shah Pahlavi, H. H. Teymourache, His Excellency Karaghozlou, Professor André Godard, Director of Antiquities, Mr. Charles Hart, Minister of the United States, Mr. George Wadsworth, First Secretary of the Legation, Consul Robert S. Streeper and Vice-Consul Arthur L. Richards, and to Dr. and Mrs. Frederick R. Wulsin, Mr. J. Z. Mirzayantz, and members of the faculty of the American College. To Professor Ernst Herzfeld particular acknowledgment is due for first drawing attention to the possibilities of the site, and for advice and assistance during the progress of the work.

E. F. S.

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THE OLD MINARET OF THE MAIN MOSQUE IN DAMCHAN

TEPE HISSAR: EXCAVATIONS OF 1931

The Joint Expedition to Persia of the University Museum
and the Pennsylvania Museum of Art

By ERICH F. SCHMIDT

THE EXPEDITION

The Aims of the Expedition

It is the aim of every archaeological expedition to uncover remains of peoples and cultures of the past. They may be houses of the commoners, palaces of the rulers, or places of worship; modest domestic utensils and tools, or great works of art; weapons or ornaments; the remains of human beings and animals, or, more seldom, objects of floral matter. These remains combined enable the archaeologist to reconstruct a fairly complete picture of the material culture of past peoples. Many finds give him a glimpse as to the less tangible aspects of their lives. But only those advanced human groups that were able to perpetuate their thoughts by written characters decipherable to us, give us definite knowledge, through the medium of their inscriptions, of such features as social relations, literature, law, religious beliefs, politics, and, not to be forgotten, their very language.

As a rule, an archaeological expedition has one principal working focus from which minor activities radiate. In other words, there is a large scale excavation of an important mound, combined with explorations, and with soundings of other culture deposits in the environment. The excavation, if carried through in a mound inhabited for a considerable time, will give the vertical cross-section of the culture deposits and their 'guide fossils' by means of which the horizontal section, namely the settlement history of the entire region will be determined.

The aims of the Joint Expedition to Persia were two-fold. Paradoxically, the first phase of its activities was the test of a Tell in Mesopotamia, namely Fara [Plate LXXIV], supposedly the Sumerian Shuruppak. Our experiences at this splendid site and an extract of the results of the test



THE NEAR EAST—THE SITES OF FARA AND DAGHIAN ARE INDICATED BY CIRCLES

have already been described in these pages.¹ Our second and principal task was the excavation of Tepe Hissar, near Damghan [Plate LXXIV], in northeastern Persia, and the examination of the neighborhood for the location of the Parthian capital, Hecatompylos, and other sites. The organization of the two Philadelphia museums sponsoring the expedition required consideration. The University Museum is mainly interested in pre-Christian remains, while post-Christian sites, preferably Sasanian and early Islamic, are of major interest to the Pennsylvania Museum of Art. We could hope—according to Professor Ernst Herzfeld, who had traced the site and suggested it for excavation to the University Museum—to illuminate the Dark Age of Persia by means of the pre-historic remains present at Tepe Hissar. As to later remains of importance, the future had to tell whether they existed in the Damghan region.

Damghan and Its Environment

In a previous report to the Museums², we described the long trek from Fara in Iraq, across the Land of the Two Rivers, through the Zagros Mountains and the Gate of Asia to Teheran and Damghan. The hardy Ford truck carried the expedition material and ourselves, while a rented truck brought the tracks and lorries of a field railroad from Baghdad to the distant goal.

There is a spring called *Cheshme Ali*, The Eye of the Ali, in the foothills of the Elburz Range to the northwest of Damghan. *Cheshme Ali* is the life source of the town. Stop the little river running from this spring, and Damghan will turn into a low hill of ruins on the steppe, similar to many former settlements scattered in the neighborhood.

The impressive ruins of a citadel rise above the girdle of modern houses and gardens filled with fruit trees, poplars, and the like. The slender forms of two old minarets with Kufic inscriptions [Plate LXXIII], some *Imam Sadeh*—that is, tombs of descendants of the Prophet—and an important ruined building, *Tari(kh) Khaneh*, are the most interesting buildings, apart from the citadel.

The dilapidated character of the town-wall tells that peace had come, long ago, to Damghan, the history of which, dramatic at times, is told by

¹ *Museum Journal*, XXII, 3.

² Published in *Art and Archaeology*, XXXIII, 2, March-April, 1932.

A. V. W. Jackson in his book *From Constantinople to the Home of Omar Khayyam*. At the same time, the course of the town-wall suggests that Damghan has been more extensive in the past.

The manner of life of the Damghan people is the same as that in most small Persian towns. Business life is centered about a long, covered bazaar street, flanked by little shops, in which all the necessities of daily life are sold. But the Damghanians do not excel in those industries for which certain Persian towns are famous. Their looms were never known for their creations, their metal work is solely utilitarian, there are no painters of miniatures or masters in mosaic work. Architecturally, only the above-mentioned buildings of the past claim interest. Still, there is a pastoral charm about the town and its friendly people, with whom we became on good terms.

Cultivated fields, belonging mainly to big land-owners, and patches of steppe enclose the town. The plain is dotted with villages and compounds [Plate LXXV], most of which are enclosed by high outside walls. In many villages a crumbling fortress still reminds one of the former times of unrest.

In the north and northwest, the Elburz range rises abruptly from the plain, which is about 3900 feet above sea level. A supposedly difficult path leads from *Cheshme Ali* across to the province of Mazanderan, north of the mountains. We were told it takes three days on horseback to reach that humid and immensely fertile country. On certain days, when the Damghan plain is parched by the heat of the summer, walls of clouds tower above the highest mountain ranges; but in summer the clouds seldom reach the southern slopes. Mazanderan receives their rain. Not until late fall do the clouds sweep across the barrier and bring with them heavy rains, soon followed by snow and intense cold.

In the south, the steppe fades into the great central Iranian Salt Desert, the *Kavir*, inhabited at the rim only by wild asses, gazelles and the like. Man can not exist here. In the west the highway to Teheran (361 kilometers away) leads across a spur of the Elburz to Semnan, while towards the east the road ascends a gentle slope to Shahrud and Bustam to continue to Meshed, one of the places of Shiite pilgrimage.

The maps of the Damghan Region [Plates LXXV and LXXVI] indicate a number of sites, namely, flat ruins and small mounds. Many of these we have examined. Their period of occupation was defined by



THE JOINT EXPEDITION TO PERSIA
 DURING NOVEMBER 1931
 SURVEYED BY THE ARMY

- a. Modern Village
 a. Modern Village
 a. Modern Village
 a. Modern Village
 a. Modern Village





means of the surface sherds. Most of them are Islamic; some seem to be late pre-Islamic; while the only pre-historic site, so far determined, is Tepe Hissar.

Expedition Base and Personnel

Our experiences in the desert camp at Fara were more exciting than the life in the spacious Damghan house, but the latter was certainly a more adequate working base. In addition, it was considerably less expensive than a tent camp. Thus we preferred to live and work in town, whenever the mound did not require our presence. While at Fara the truck had to carry all our water for a distance of 23 kilometers, in Damghan a swimming pool was in our very garden. In spite of the spaciousness of the museum and recording room, at the end of the fertile season it was far too small to accommodate all the finds from Tepe Hissar. The dining room was then filled with shelves and tables carrying the numerous stuccos from the Sasanian palace. The walls in the writer's room were covered with shelves on which lay about a hundred skulls and other bones of many more skeletons. Potsherds were spread on the porch; an additional small house had to be rented as a laboratory for restoring the stucco units.

The organization of the work remained virtually the same as at Fara. Derwood W. Lockard, as general archaeological assistant, took care of the office work. He surveyed most of the excavated plots, prepared burials for the description and removed the finished skeletons. Erskine L. White, the architectural assistant, surveyed the Sasanian palace with the accurate findspots of the hundreds of stucco elements, and described it technically. In addition he made the survey of Tari(kh) Khaneh, in Damghan, and the final drafts of the excavation surveys. Kurt Leitner, the Austrian topographer, made the painstaking survey of Tepe Hissar, a work of two months. He made, further, the plan of the Damghan Citadel, the map of the town of Damghan, the ten-kilometer quadrant around Damghan, and the archaeological map of the Damghan region. The task of the field director was, as usually, the general organization, the administration of funds, the recording of finds, burials, general architecture, and the combining of all information obtained by the staff.

In Damghan large scale operations required a steady photographer, thus St. Niedzwiecki, a Polish artist photographer, was employed. We

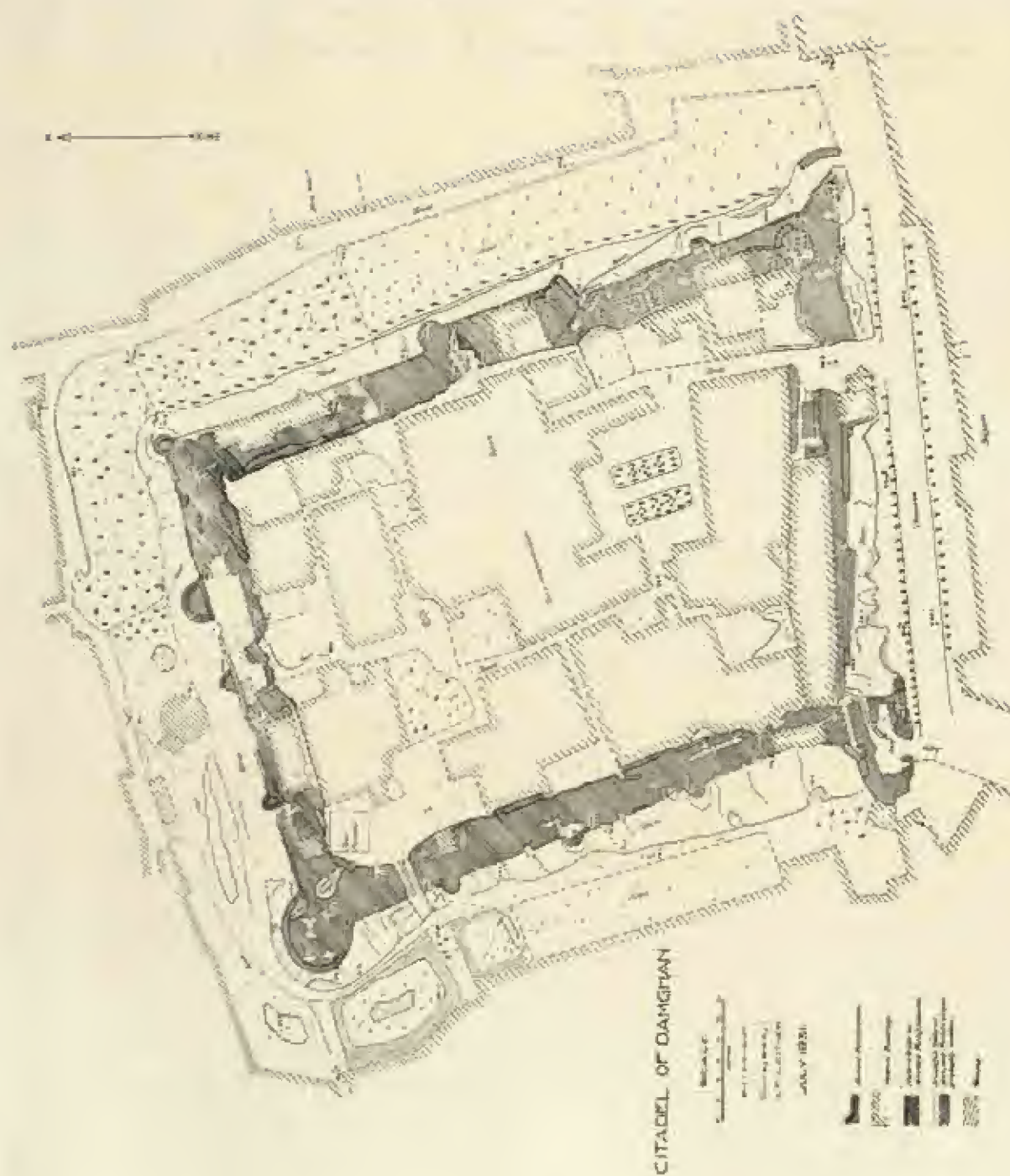
owe to him many excellent photographs. Towards the end of the season, however, it was found necessary to employ, in addition, a Russian assistant photographer, Mr. B. Dubensky, who proved to be an extremely useful technical worker. Our Russian artist, Ivan Gerazimoff, who was also architecturally trained, accomplished an extraordinary amount of work. He made hundreds of diagrams and design drawings of all the finds, water colors of the most attractive specimens, in addition to the hypothetical restorations of the Sasanian palace and the actual restorations of the stucco elements found in the palace.

Khatib Sadeh, a school master from Damghan, was the temporary agent of the Persian government, loyal to the latter and helpful to us. There was further the chauffeur-mechanic, Henry Bosander, Baba Georgis, the head foreman, the foremen, Khalil, Seid Ali, and Golam Husseyn, a cook and servants.

Tests of Damghan Citadel [Plate LXXVII] and Tepe Muman

Professor Herzfeld had suggested excavations in the Damghan citadel in addition to Tepe Hissar. Technical difficulties, however—mainly the presence of modern buildings including the town administrative quarters—prevented us from more than testing a corner of the fortress. Five days after our arrival in Damghan we broke ground in the test square. At 5.10 meters below 0.0 we struck sterile rubble and the bottom of the culture deposit. We found that against our faint expectations, no pre-Islamic remains were present. Several occupational levels were defined. We found a number of Islamic coins, objects of bronze and iron, and some fairly well preserved glazed or plain lamps, bowls and pitchers of middle and late Islamic times. A valuable chronological series of glazed, incised and plain potsherds was obtained. The test was abandoned to be resumed during the second season in the town territory near Tari(kh) Khanah, mentioned above.

Tepe Muman, an extensive deposit about 22 kilometers east of Damghan, was tested for one week, during an intermission of the work at Tepe Hissar. Again our hopes as to the presence of pre-Islamic remains were not fulfilled. Glazed and plain Islamic vessels of rather simple provincial type, objects of bronze, iron, and bone, emerged from the test plots. The objects of the Damghan Citadel and of Tepe Muman are very



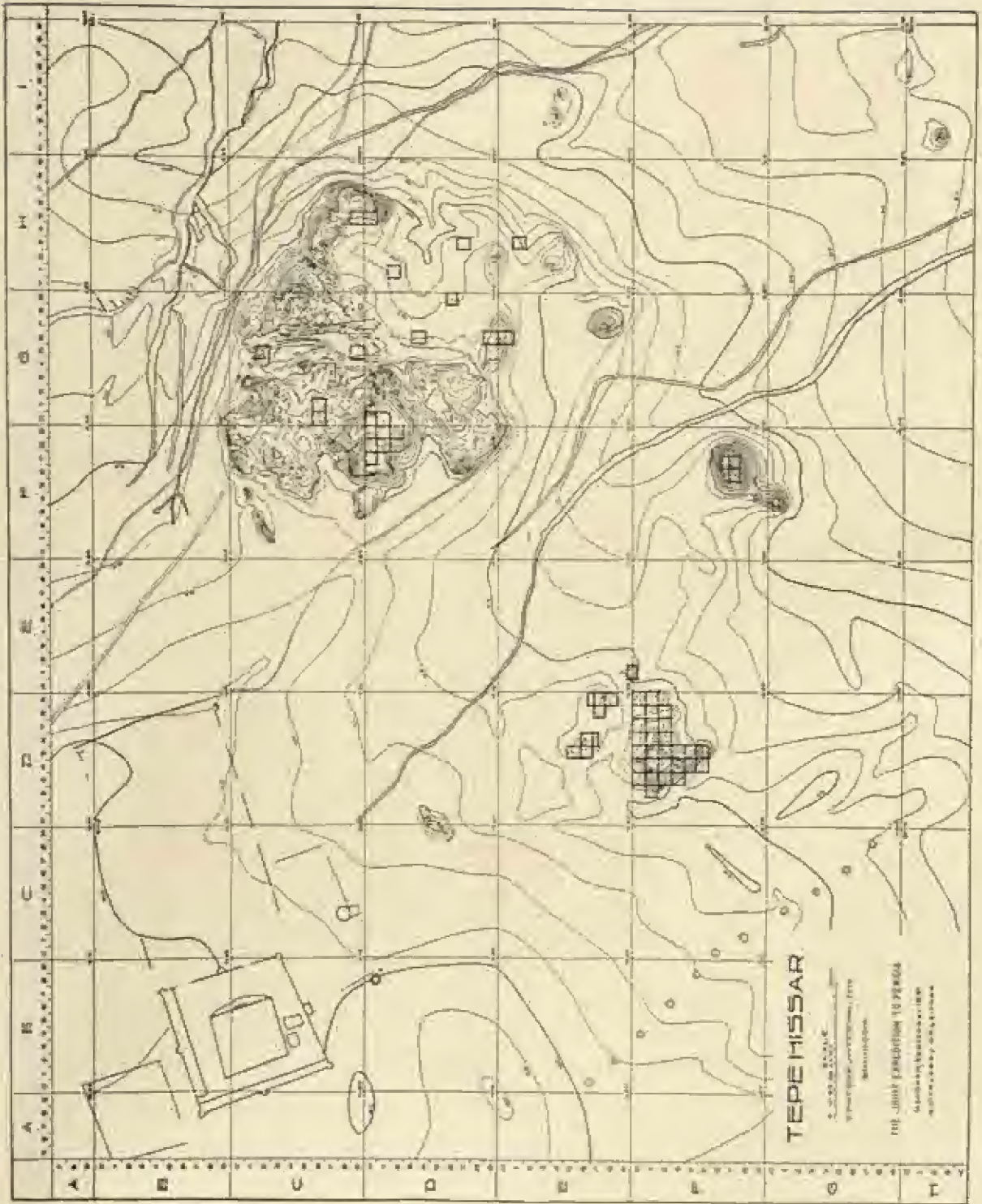
modest indeed, compared with the splendid creations of the Middle-Islamic pottery makers, tile and metal workers of Ray and Saveh in the district of Teheran.

Topography of Tepe Hissar

Tepe Hissar—'Castle Hill'—is a low ruin mound about 3 kilometers southeast of Damghan. The total diameter of the site is about 600 meters, while the mound nucleus extends over an area of only 200 x 300 meters. The form of the site with its main complex, platforms, and outlying hill-ocks is well indicated by the map [Plates LXXVIII and LXXIX]. However, at the start of the excavation, this map was not yet at our disposal. A mental survey obtained by frequent combing of the surface had to suffice. The ideal manner of beginning an excavation requires an accurate map before the start. The reading of the map, combined with the surface examination by the excavator, dictates his moves. There are two main clues which guide the archaeologist in attacking a mound: the distribution of the pot fragments on the surface and the topography of the site. We may consider the results of both surveys at this point, although they actually belong in part to the chapter on excavation methods.

At first glance it was evident that the site had suffered considerably through the effects of water and wind, and to a lesser degree by human hands. The outline of the main complex has not the smooth edge of well preserved deposits. Deep lateral and vertical gullies are cut into the hill. The complex is actually split in two by a deep gulch in Quadrant CG. Naturally, it followed that considerable denudation had taken place, destroying particularly the margin of the originally settled area, and diminishing the volume of the latter.

In the remainder of the main complex (roughly, Quadrants DF, CF, DG, CG, and CH), we at first distinguished two topographical steps: the pronounced elevation in general and the slightly raised 'flat' situated mainly in the eastern part of the Quadrant DG and in Quadrant DH. The topographical conditions were roughly paralleled by the distribution of two categories of pottery: gray ware prevailed on the elevations, painted pottery predominated in the flat. The dens of jackals and other denizens of the mound proved to be of great assistance during the surface survey. In front of those holes, situated at elevated points, gray sherds were



lying, while painted sherds had been thrown out of the lower dens. At certain points of medium height, the two wares were thoroughly mixed. These results of the surface examinations gave us the first clues as to the composition of the site. They suggested definitely that a stratum characterized by gray ware is superimposed on a deposit defined by painted pottery. The subsequent excavation verified these conclusions.

Not until the excavation had far advanced did we find that we had overlooked another clue suggested by the topography of the main complex. We had considered the entire elevated area as one step, though we spoke of the 'main mound' while referring to the highest elevation situated in the northeast corner of Quadrant DF and in the adjacent plots. This main mound actually proved to be the third step of the tepe formation, while the extensive lower terrace situated north of it seems to represent mainly the second phase of the tepe's growth, though buildings of the third period may, of course, be present.

The surface pottery and, to a certain extent, the map both indicate that the culture deposit of the main complex extends for some distance into the plain towards the south and the west. It extends certainly as far as the ruin hillocks in Quadrants EG and EI. These hillocks are capped with culture refuse containing gray pottery, but the substratum always seems to contain painted ware. This composition is particularly pronounced in the interesting Twin Hillock of Quadrant FF.

We turn finally to the low mound, situated mainly in Quadrant FD. There was nothing significant about its topography. A few glazed Islamic sherds lay on the surface, in addition to some gray reddish, and even painted fragments. There were also lumps of badly weathered gypsum, some showing traces of ornamental markings. We called the little mound 'Islamic Hillock', but we were wrong. It proved to cover a remarkable Sasanian building constructed on top of pre-historic deposits.

The ruined Qala in the northwest corner of the map is, of course, a late Islamic construction, perhaps not older than a few generations. It is no object for archaeological research.

Tactics and Methods

In the preceding section we interpreted certain topographical features which decided to a large extent our excavation tactics. At first we concen-



PANORAMA OF TEPE HISSAR, LOOKING SOUTHEAST, AS SEEN FROM THE ISLAMIC QALA

trated solely on the elevated deposits characterized by the gray pottery. In order to determine those points most fertile as to information and objects, we advanced in loose order and attacked the most prominent sections of the main complex. So far, our tactics were identical with those applied at Fara. However, this first phase of the work lasted only two weeks. Ten squares, that is, one thousand square meters, had been tested to various depths within the stratum of the gray pottery. The purpose of the soundings was fulfilled. The main mound tested in Plots DG10 and DF19 had proved to be extremely fertile, the results surpassing those obtained in the other test plots.

Now the excavation crystallized. The scattered crews were united for the excavation of the most prominent section of Tepe Hissar. A hundred and sixty men were thrown on the main mound. On two tracks the lorries of the field railroad worked full speed to remove the dump dirt, which would otherwise prevent expansion of the excavation.

The twin hillock in Quadrant FF seemed to be ideally fitted for sectioning, promising clean-cut, superimposed layers of culture deposit. A part of the crew was therefore detailed to truncate the higher of the 'Twins'.

Conscientiousness, rather than enthusiasm, induced us to detach one more unit of the crew for the investigation of the recent looking hillock in Quadrant FD. But, after a short time, the inconspicuous mound became the second focus of the operations at Tepe Hissar. The test proved the presence of an important Sasanian building filled with remarkable stucco ornaments. Thus, when the excavation of the main mound was paralyzed by a great number of burials, the entire crew was gradually drawn to the 'Sasanian hillock', which was uncovered in its entire extent.

The last phase of the operations of Tepe Hissar during Season 1931 consisted of the test of the painted pottery stratum [Plate LXXX], following the short test of Tepe Muman. The preparations for this last spurt of the season were particularly thorough. The 'Painted Pottery Flat' and the depression splitting the main complex in Quadrant CG were spanned with a net of staked excavation squares. As usual, white ropes bordered those selected for the first tests.

It had been our original aim to section the main complex from the highest point to the bottom of the culture deposit, at least in one square. This intention could not be carried out without neglecting the burials.

Thus we had to apply 'indirect sectioning' by examining step-wise those points where the earlier deposit cropped out from below later accumulations. The topography of the painted pottery flat and the depression in Quadrant CG fulfilled the requirements for the examination of the earliest stratum. But before throwing the entire crew on these points, we verified our assumptions in the test plot CG 95. Below a thin deposit of gray pottery we found here the first burials supplied with the attractive painted vessels of the earliest Tepe Hissar stratum defined so far. The surface had told the truth.

From the Sasanian palace the tracks and the lorries of the field railroad were carried to the painted pottery flat, where the dust rose above the last excavations of the season, carried through with more than 200 men. In addition to finding many well-supplied burials and architectural remains of the earliest period (Hissar I), we succeeded, at last, in definitely dividing the deposits characterized by the gray pottery, into two distinct groups, Hissar II and III.

The actual excavations stopped on November 6th. The remaining burials and architectural remains, and the removal of the dump dirt continued. The subsequent months were spent in making the work of the season complete. There were the actual and theoretical restorations of the Sasanian palace and its ornamentation, the final drafting of maps and plans, the drawing, painting, and photographing of many hundreds of specimens, the scientific description of the vessels and all the other objects, and, finally, the combining of all information obtained.

The methods of excavating and recording were about the same as those applied at Fara, and described in the preliminary report on our work at that site. But there were less handicaps at Tepe Hissar, and work proceeded, therefore, more systematically.

At the start of the excavation the map of the site was not yet available. Thus an arbitrary center was fixed on the main mound (northeast corner of Plot DF 09). Through this point north and south, and east and west, lines were run and subdivided into hundred-meter sections. Then the main complex was spanned with hundred-meter quadrants and the ten-meter squares covering the desirable test points were staked out. (A plot, for example, DF 09, is determined on the map as follows: D defines a west-east series of hundred-meter quadrants, F a north-south series. DF, therefore, is the quadrant common to both series; 0 marks the west-east

row of ten-meter squares in quadrant D; 9 defines a corresponding series in the north-south quadrants below F. Therefore, 09 is again the ten-meter square common to both series within Quadrant DF.)

While the soundings proceeded, the entire ruin area was subdivided into quadrants. Each corner was marked by long, heavy stakes fixed by rocks and rubble. Their tops were left flush with the surface and covered with dirt cones for rapid identification of the points where they were buried. Thus, it was a matter of minutes only to define any square desirable for excavation, at any point of the site. Then, after the net of quadrants had been staked, the topographical survey started. We chose half-meter contour intervals in order to show the faint, though often significant irregularities of the surface. The survey was fixed by four cemented bench marks (BM 1-4). The elevation of BM 1 was arbitrarily determined as 10.0 meters. While the surveys of Tepe Hissar, the Sasanian palace, the Damghian citadel and the other topographical maps, were made by means of a transit, small, handy traverse tables were used for the surveying of most of the excavated structural remains, burials, and the like. A large level and a small one were used accordingly, while a Brunton pocket transit was employed as an auxiliary instrument on reconnaissances and the like. We may mention, at this point, that our Zeiss cameras, Universal Jewel, sizes .09 x .12 and .13 x .18, stood up splendidly under the strain of two seasons. There were, further, several .06 x .09 cameras, as steady companions of the staff members.

The technique of excavating was about the same at Fara and at Tepe Hissar. But in Mesopotamia, basket carriers removed the dirt from the excavation squares, while at Tepe Hissar shovel men threw out the dump dirt to be carried away by the railroad cars, as fast as conditions allowed. The depths of the finds and excavations were measured from stable "naught-naughts". Important specimens were entered in the newly acquired plot books, in which printed squares were subdivided into a hundred sub-squares, each marking one meter. In the same book a system of subdivided quadrants showed the daily stand of the operations.

Determining the Succession of Cultures at Tepe Hissar

The full story of Tepe Hissar cannot be told until the publication of the second and final campaign of 1932. New information and new

objects were found to fill the gaps. Puzzling problems were solved and new ones arose. Furthermore, large areas of the mound remained to be explored at the close of 1931. But our experiences of the first season allow us at least to draw a sketch interpreting certain features, and to present the objects on which our information is based.

Pottery vessels were, as usual, our principal guide fossils, supported by most of the other categories of finds, which include glyptic, metal objects, stone tools and vessels, figurines of metal, stone, and baked clay, bone tools, whorls, and miscellaneous pottery objects, beads and pendants, stucco ornaments, the remains of human beings and of animals, and the architectural remains.

Features such as the relative position of the finds within the mound, pronounced differences of form, material, and the like, and the absence or presence of certain categories of remains defined the culture strata of Tepe Hissar.



START OF WORK IN THE PAINTED POTTERY PLACE—MATS MOUND IS LEFT BACKGROUND

HISSAR I

The Stratum of the Painted Pottery

About 3000 B.C., let us estimate, the present plain of Damghan already was settled by an agricultural people whose name, origin, race and language are unknown to us. From Early Sumer, the far-away settlers of Tepe Hissar were just about as far removed as they are now from us. If they had ever appeared in the cuneiform records of contemporaneous Mesopotamia, they might have been called collectively, 'People of the Highland'. There are no written records of their own which can tell us more, and our only clues for their identification are the material remains found in their crumbled houses and in their graves.

The Hissar I settlement apparently received its water from the same source supplying present Damghan. The same high mountains barred the clouds, then as now, from bringing rain to the fields, forcing the settlers of the plain, during all times, as long as the soil was tilled, to irrigate the land.

Although we found no remains of actual grains, the permanent character of the buildings, the rather elaborate and frequent pottery vessels, and fragments of the omnipresent type of hand grinder are sufficient proof that the people of Hissar I were sedentary and agricultural. We may assume that wheat was their staple cereal, supplemented by the meat of domesticated animals and of game from steppe and mountains. The identification of the animal bones will show in due time which animals, wild or domesticated, were known to the early Tepe Hissar people. Ibex and gazelle are shown on their pottery decorations. Sheep and long-horned cattle are represented by little clay figurines.

Settlement and Building Remains of Hissar I

The town of this period covers a larger area than the subsequent settlements, but this may be due to the considerable denudation of the upper strata, not protected by later deposits. At any rate, the settlement of Hissar I, in the same manner as those of Hissar II and III, appears to have been the most important site of its time in the entire Damghan area, and



PERIOD I WALLS IN SQUARE CG 95—IN THE BACKGROUND ARE TENTS ON TOP OF THE MAIN MOUND

perhaps of an even larger territory. The extent of Stratum I is mainly defined by the occurrence of painted potsherds, which are scattered over the faint swells extending from the Tepe and finally fading into the surrounding plain.

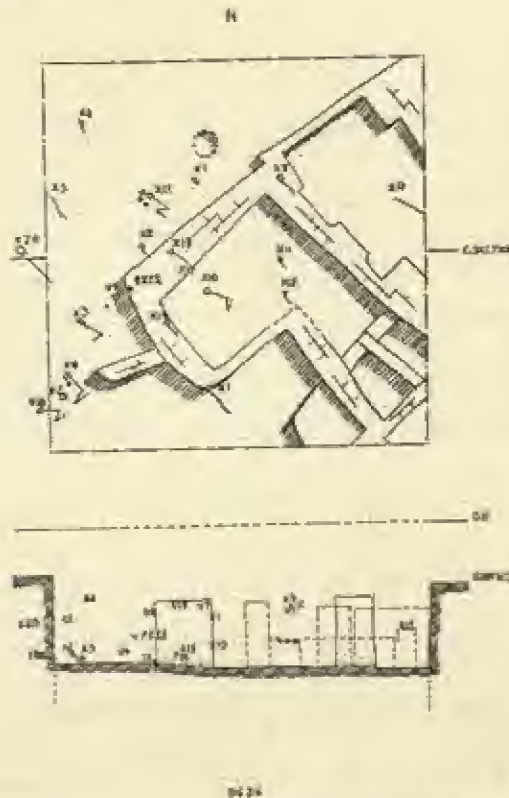


FIGURE A.—PLAN AND SECTION OF HISSAR I
REMAINS IN SQUARE DG 36

Our excavations in the 'Painted Pottery Flat' only sounded the stratum of Hissar I [Plate LXXXI] without uncovering coherent building complexes. This task was deferred until the second season. The walls enclosing small or medium sized rooms are made of straw tempered mud, like the buildings of all subsequent periods; but, as a rule, no brick marks were traceable, suggesting that the walls were constructed of mud layers rather than of individual bricks. This type of construction is still being employed for outside walls, garden enclosures, and the like, by the modern Persians.

There are no wall foundations of stone or baked brick. As a matter of fact, fired brick was not employed during any of the pre-historic Tepe Hissar periods. So far, no interesting architectural details have been determined, such as elaborate fireplaces, drainage devices, or pavements.

Pottery Vessels of Stratum I [Plates LXXXII-LXXXIX]

The pottery marks, archaeologically, the fundamental difference between Stratum I and the subsequent deposits. Thousands of sherds coated with shades of red or brown, many decorated with dark gray or brown patterns appeared in the rooms and in the refuse of Stratum I, and many vessels with pleasing designs, accompanied the dead. In a striking manner, the unpainted gray or black pottery of Strata II and III contrasts with the earlier ceramics.

Doubtless, the painted vessels of Stratum I constitute our most valued finds. They are creations of the most imaginative pottery-makers of all the periods that left their traces on the mound. But we may mention at this point that the Hissar I vessels are already products of an advanced pot-maker's art, as shown by some elaborate decorations, by the wheel technique and by forms rather elaborate, though more standardized than those of the succeeding ceramic series. We found only bowls, jars, cups, and storage vessels, with two-color decoration. No polychrome vessels or sherds occur.

The photographs and drawings sufficiently illustrate the often graceful bowls, most of them supported by stems of various heights with expanding bases. The most frequent decorations are simple, namely, series of vertical or angular dashes on the upper bodies. Other patterns include zigzag lines with hatched triangles, lozenges, waves, 'combs', 'ladders', or series of parallel angles resembling birds in flight. The most interesting designs show highly conventionalized animals, such as ibexes, gazelles, felines, birds, and perhaps even human beings. The stems are encircled by bands, and series of dashes decorate the bases.

The ornamental elements on the jars and bowls are about identical, but the jar designs extend from the contracted necks, sometimes perforated for suspension, to a point below the maximal diameter. Two jars deserve particular attention, the most elaborate [H 802, Plates LXXXIII and LXXXVII] and the most primitive [H 1522, Plates LXXXIV and



H. 1527

A.—HISSAR I BOWL WITH FELINE DESIGN. SCALE 1:2



H. 1539

B.—HISSAR I BOWL WITH GEOMETRIC DESIGN. SCALE 1:2



H 802

A.—Hissar I Jar with Ilex Design. Scale 1:2

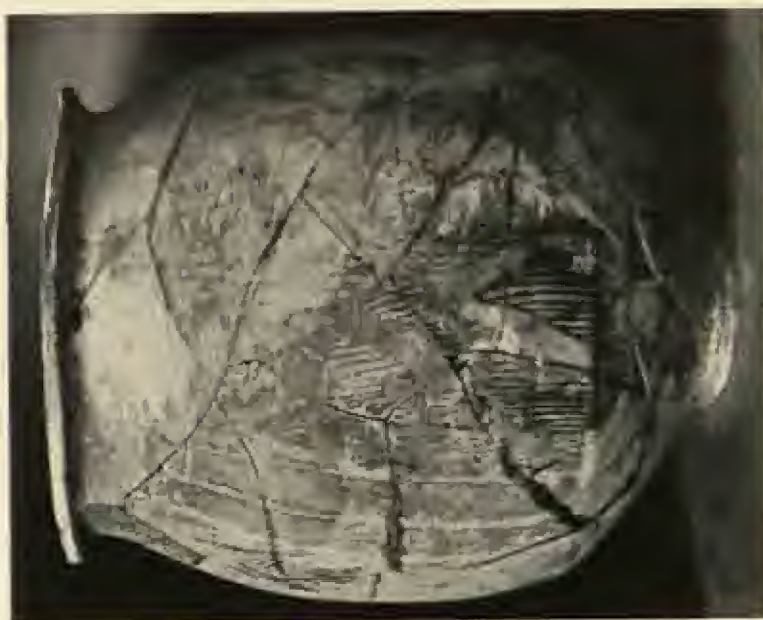


H 1561

B.—Hissar I Bowl with pointed bottom—Design of Paired Angels. Scale 1:2



U. 3222
A.—Early Hissar Jar with Geometric Design.
Scale 1:2



U. 3671
B.—Hissar Storage Vessel with Geometric Design. Scale 1:6



H 1130



H 812



H 815



H 1141

HOSSA I BOWLS WITH GEOMETRIC DESIGNS (H 1141 WITH 'BROWSING GAZELLES').
SCALE 1:3; H 1141—1:2



H 819



H 1127

A.—HISSAR I JARS WITH GEOMETRIC DESIGNS. SCALE 1:3



H 1276

B.—HISSAR I CUP WITH ROW OF CONVENTIONALIZED RIBS(?). SCALE 1:2



H 948

C.—HISSAR I PLAQUE WITH ABEX PATTERN. SCALE 1:2



H 1131



H 1361



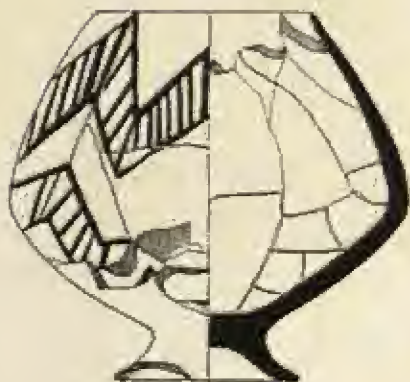
H 1126



H 802



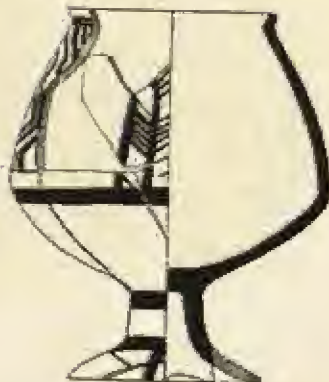
H 802



H 1009

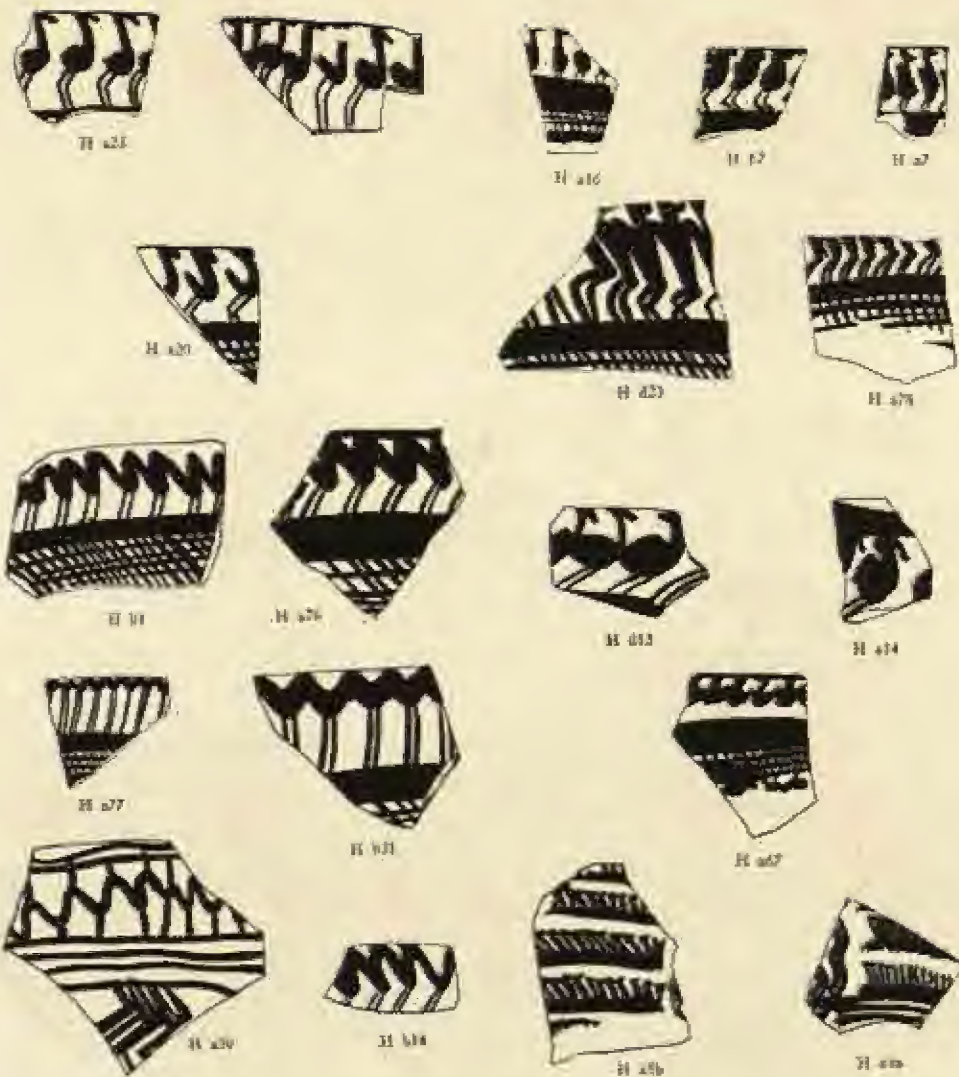


H 1022

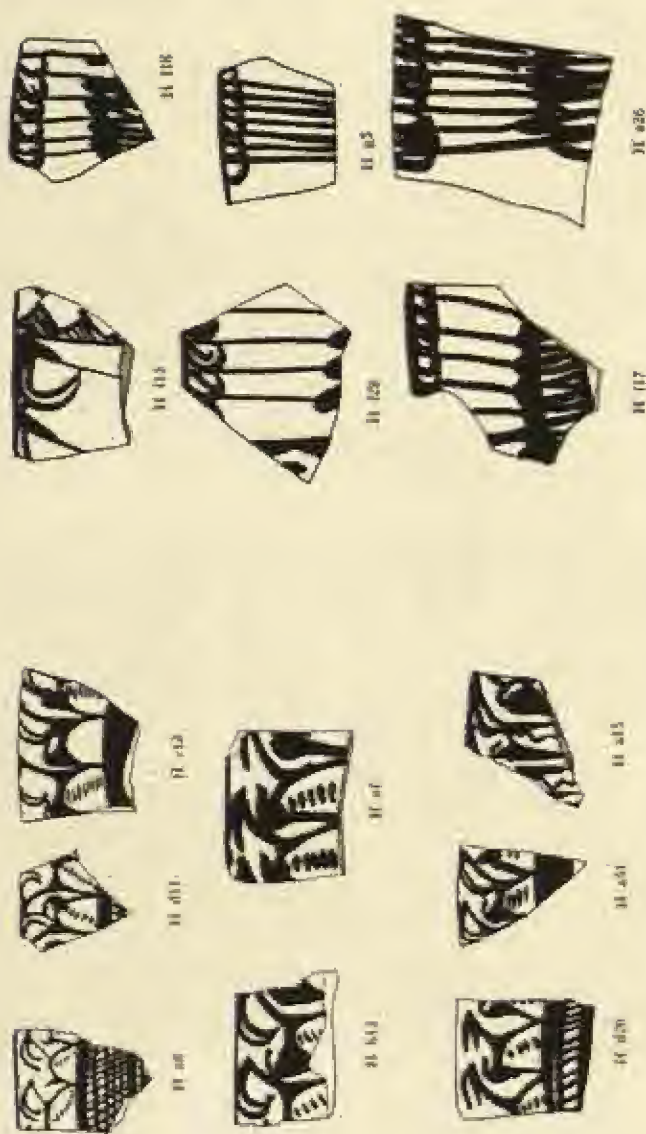


H 1002

HISAR I BOWLS AND JARS. SCALE 1:1 EXCEPT DETAIL OF H 802—1:8



HISSAR I SHARDS—BIRD DESIGN AT VARIOUS STAGES OF CONVENTIONALIZATION. SCALE 1:3



HISSAR I SPHERO-GAZELLE DESIGN AT VARIOUS STAGES OF CONVENTIONALIZATION. SCALE 1:3

LXXXVII]. The dark brown decoration of the former is applied on light brown ground and consists mainly of three panels filled with an ibex and two gazelles (?) separated by paired 'comb' or branch patterns. The second jar accompanied the lowermost and presumably earliest burial uncovered. It is crude, hand-made, and decorated with dark gray comb patterns on brown red ground. It is possible that this vessel indicates an early and more primitive phase of Period I, one of the problems the solution of which was reserved for the following season.³

The standard cup of Period I is an inverted convex cone, sometimes truncated and decorated with lines radiating from the base to the lip. The ground color ranges from grayish brown to buff and red shades, while the decoration is dark gray, dark brown, or purplish red. In addition to the simple but attractive line decoration, somewhat more elaborate designs occur, the elements of which are identical, as a rule, with those found on the bowls and jars. Again, the most interesting but at the same time rarest patterns show conventionalized felines, gazelles and also birds in rather humorous processions.⁴

The storage vessels, finally, are medium-sized jars, broad-mouthed, and decorated with solid or hatched zigzag lines [Plate LXXXIV, B].

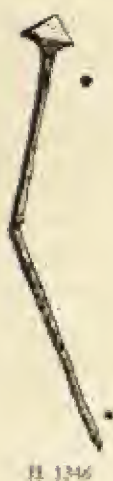
Copper Objects of Stratum I [Plate XC]

It was customary for the Hissar I people to deposit a pin of copper in one of the vessels given to their dead. We assume they were garment pins like those very similar ones found on the chests of the skeletons of the presumably contemporaneous 'Red Pottery People' in Anatolia. Only conical, bi-conical, pyramidal and bi-pyramidal heads occur.

³ During the second season the lowest sublayer of Period I, defined by such pottery, was definitely determined.

⁴ The groups of drawings of such designs on potsherds (Plates LXXXVIII and LXXXIX) show extremely interesting phases of conventionalization with which we will deal fully in the detailed publication to follow. The last, well-definable stages of the gazelle pattern with exaggerated necks is shown in the chapter on Hissar II pottery. The conventionalization of the amusing bird pattern is particularly striking. We must state, however, that often the phases of conventionalization do not seem to be apart in time. We found several modifications of the same pattern at various stages of conventionalization in the same levels of Hissar I. Thus individual playfulness of the pottery painters, as frequently as the influence of time, seem to have conventionalized the Hissar I ornamentation.

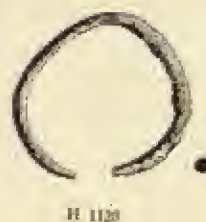
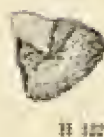
To a certain extent we succeeded even during the first season in distinguishing some patterns of Period I decoration which are earlier or later than the bulk. Certain painted vessels were actually found in the earliest Hissar II graves together with gray vessels of the second period, an extremely interesting fact which is dealt with in the chapter on Hissar II pottery below. Again, one simple design on a definite type of usually buff-colored cup persists to the very end of Period III, after all other varieties of painted ware had long since disappeared (Plate CXVII).



A.—Hissar I Copper Pins. Scale 1:3



B.—Hissar I Copper Dagger Blade. Scale 1:3



C.—Hissar I Copper Triangle, Bracelet, and Points. Scale 1:3

The copper daggers of Stratum I are quite distinct from those we found in later graves. They have rather long slender blades, with only slightly pronounced shoulders, and short round stems. No copper bracelet was found with the dead. One simple, open ring occurred in doubtful Hissar I-II refuse. Short and long points may have been used as weapons heads, forming another parallel with Early Anatolia.

Assumed bronze objects from Stratum III were analyzed by Messrs. McNeill and Brainerd of the American College in Teheran. It was shown that even these relatively late specimens contained not more than 2% of tin, while we call bronze an alloy of copper with at least more than 5% of tin.⁵ Thus we are rather safe in using the designation copper throughout the prehistoric periods of Tepe Hissar, until further analyses of metal objects of all strata shall correct us. Native tin, we were told, is absent in this region of the country. Besides copper, no other metal was found in Stratum I.

Seals of Stratum I [Plate XCI]

The very frequency of Hissar I 'seals' proves that many of them, particularly the small specimens, have simply been employed as ornaments. As many as six 'seals', sometimes graded in size, lay on the chests or beside the upper arms of the skeletons. But for technical reasons we consider all seal-shaped objects in this chapter.

The material is serpentine, alabaster, baked clay, gypsum and frit. The occurrence of the latter in northeast Persia during the third millennium is surprising, but there can hardly be a doubt about its character. As a matter of fact, we must state that even rudimentary glazing was apparently known to the Hissar I people, for we found patches of hard and lustrous brown or mainly green coats on seals and beads.

⁵Three additional analyses of copper objects were made by Mr. W. C. McNeill, after this report was written. The analyses showed the following percentages of tin in samples from the three Hissar Strata:

| | |
|------------------------|-------|
| Hissar I (early) | 1.72% |
| Hissar II | 0.61% |
| Hissar III | 2.90% |

Though the percentage of tin in the Hissar III sample is rather high, compared with the other specimens from the preceding layers, it is not high enough to consider it artificially alloyed with the copper of the specimen. In addition Mr. McNeill states that his figures are apt to be high, due to certain impurities he was not able to correct. A qualitative analysis of the objects under consideration will follow. We think this additional information justifies the term Copper Age for our region, and the designation 'copper' instead of 'bronze'.



H 1223

H 1258

H 1230

H 1227



H 1228

H 1293

H 1101

H 358

H 1087

H 959

H 331



H 1012

H 987

H 1204



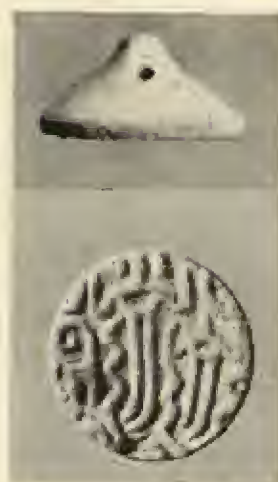
H 1263

H 1264

H 1265

H 1266

H 1304



H 20

HISSAR I 'BUTTONS' AND SEALS. SCALE 3:4.

As a rule, the incisions on the sealing bases form simple geometrical patterns, but there is a unique, elaborate specimen [H 20, Plate XCI] found in the top refuse of Stratum I. Its base pictures two persons, of different heights, with raised arms, and an ibex and snakes (or flames) at either side of the adorants(?). The conical seal is made of buff brown pottery with a light gray brown wash.

The remaining specimens have rectangular or circular bases. Some are button-shaped. Nearly all have either perforated handles or lateral grooves for suspension.

The designs are the omnipresent oblique or square crosses filled with additional angles, lines or stipples. There are, further, concentric circles, wavy lines, 'branches', radiating dashes, zigzags, and the like. The type series here shown illustrates all principal forms and patterns.

Hissar I Figurines [Plate XCII, A and B]

The extraordinary frequency of animal figurines in all strata of the mound, culminating in the little zoomorphic sculptures of Stratum III, is not due to the playfulness of the ancient people. These figurines had a definite 'utilitarian' purpose. They were magic images of domesticated beasts and birds, made to increase their number and the wealth of the owner. Others represented game of the steppe and of the hills, to help the hunter's luck and to protect him against the ferocious species, such as the tigers represented by the alabaster figurines of Stratum III.

The usually buff or brown colored pottery figurines of Hissar I are sometimes decorated with simple dark brown or gray lines distinguishing them from the gray brown but otherwise identical specimens of the same material, occurring in all strata of the mound. During all periods the animal most frequently represented is the sheep and the ram. But the figurines are often so crudely modeled that it is difficult to say whether sheep, ram or goat, dog, or cattle are represented. At any rate, long-horned cattle are shown by several unusually large Hissar I figurines, in addition to smaller specimens of sheep and rams. There is, further, an effigy spout (H 985) in form of a light greyish brown snake or turtle head, painted with dark brown lines and stipples.



A.—HISSAR I POTTERY FIGURINES, SCALE 1:3



B.—HISSAR I POTTERY FIGURINES, SCALE 1:3



C.—HISSAR I POTTERY SPINDLE WHORLS, SCALE 1:3



D.—HISSAR I FLINT, PERFORATED PLANO-CONVEX DISC, ARROWHEAD(?), FLAKE, SCRAPER, AND WHETSTONE, SCALE 1:3



A.—HISSAR I MISCELLANEOUS POTTERY OBJECTS. SCALE 1:3



B.—HISSAR I BONE AWL AND DISC. SCALE 1:3



C.—HISSAR I MORTAR. SCALE 1:3



D.—HISSAR I POLISHING STONE. SCALE 1:3

Stone Objects of Stratum I [Plates XCII, d, and XCIII, c and d]

Though closer in time to the Age of Stone than the subsequent occupants of the site, the people of Hissar I apparently did not use a greater proportion of stone objects than the later settlers. Weapons and tools of stone had largely been displaced by copper implements. It remained to be seen whether earlier deposits underlie the towns of an advanced Metal Age.⁹

So far, there is not one implement of stone which may count as a definite guide fossil of Stratum I. Celts, chalcedony flakes, cores, and scrapers occur in all pre-historic strata of the mound, and, as a matter of fact, in deposits of a similar nature all over the earth.

The whetstones, the polishing stones, fragments of hand grinders, a mortar, a ring weight, an arrow head, perforated disks and the like have no characteristic form distinguishing them from the corresponding categories of the later periods. Small serpentine fragments of odd forms, suggesting parts of ornaments or inlays, may perhaps prove typical for Stratum I.

Spindle Whorls and Miscellaneous Clay and Pottery Objects of Stratum I [Plates XCII, c, and XCIII, a]

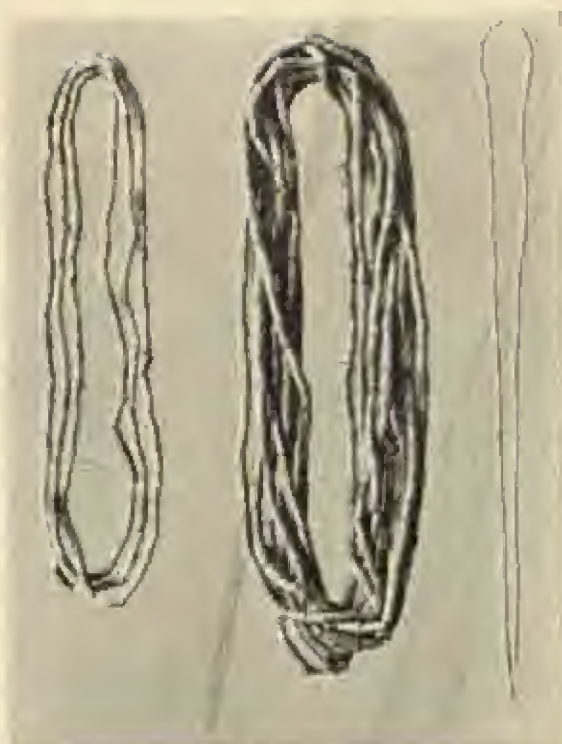
We are certain that the animal bones from the Painted Pottery Stratum will supplement our evidence as to the importance of the sheep, suggested by the numerous figurines, and by the whorls giving momentum to the spindle on which yarn of wool was spun. All whorls of Hissar I, found to date, are made of baked clay and have a form distinguishing them from the later specimens. They resemble miniature cups with perforated bottom. But there are some perforated disks and flat 'bi-cones', which may occur in any stratum.

Miscellaneous pottery objects include numerous laterally perforated disks which were perhaps used as ornaments. There are, further, problematical crescents, a star with perforation for suspension, conoidal clay objects ending in two horns, clay bi-cones present in all strata, and perhaps used as weights for some device. Plain conoidal objects, spool-shaped disks, and plain or painted potsherds re-ground to discoid shape conclude the series defined to date.

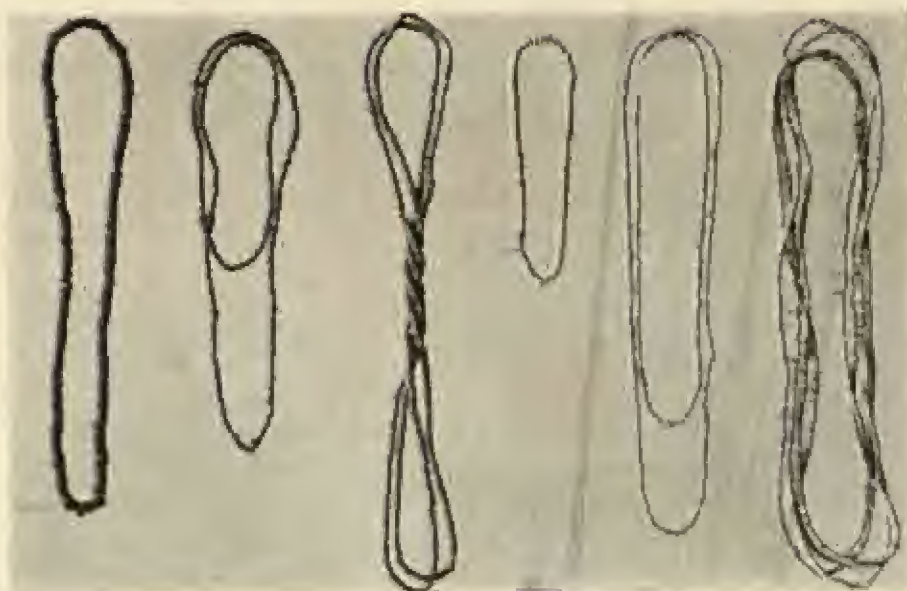
⁹ During the second season it was determined that copper objects already occurred in the lowest deposits.



H 1221



H 1222



H 1222

HUMAN T BEANS. SCALE 1:2

Bone Objects of Stratum I [Plate XCIII, B]

The scarceness of bone implements in all Tepe Hissar strata is somewhat puzzling. Copper seems to have been used for such types of utensils which could have been made of bone. At the same time, all three objects here shown, two awls and a perforated disk, occurred in a layer containing also Hissar II refuse and objects.

Ornaments of the Hissar I People [Plate XCIV]

After the end of the excavation in the fall of 1931, eight of our best workers strung beads for fourteen days and thus restored, in the original sequence where possible, the bracelets, armlets, necklaces and belts of the dead of Hissar I. The wealth of frit, gypsum, and other stone beads, once ornamenting these people, is astonishing. According to our estimate we found between 150,000 and 200,000 units of small disks, rings, tubes, biconoid and oblong beads with sometimes slightly iridescent white or greenish tan and black shades, clinging to the upper arms, wrists, necks, ankles, and pelvic bones of male and female skeletons. Carnelian, alabaster, bitumen, serpentine, shell and bone beads and pendants occurred in lesser numbers. Some oblong frit and gypsum beads are decorated with delicate incised zigzags or herring bone patterns, but no particularly elaborate forms appeared.

The Dead of Hissar I [Plate XCV]

Through the past millennia the graves of the ancient settlers preserved for us the precious vessels, weapons, ornaments, seals, and other objects of their time, which otherwise would have been crushed to bits by the crumbling walls and roofs of their former homes, or carried off as loot by foreign conquerors, or simply re-used and eventually broken and discarded by survivors.

The dead of all strata of the mound were interred below the floor of the buildings or below the surface of the occupied area in general. The relations between burials and the superimposed buildings are often not definitely determinable in composite sites, particularly if large sections of buildings have disappeared. At any rate, burials occur below every



A.—Hissar I Burial G6 95, X-6



B.—Hissar I Burial Schemata

C.—Hissar I Burial Schemata

building in any pre-historic stratum of Tepe Hissar, and also at such spots where architectural remains were not traceable. Massed burials, suggesting a definite necropolis, were found only in Stratum III on the main mound.

The burials of Hissar I showed, as a rule, no traces of grave enclosures, coffins, or the like. In one case only, a thin mud brick wall bordered a burial. As to garments, at times, traces of white patches on the bones and on the surrounding soil suggested remains of fabrics, or matting. This was noticed in graves of all periods.

There were only two definite rules concerning the burial position of the Hissar I dead. The legs were contracted in each case and the face with few exceptions pointed towards the right side, paralleled by the position of the body. The arms and the hands had various positions. In some instances the hands lay in front of the face, and suggested a praying position. Certain psychological qualities, such as fear, calmness, resignation or combat, still expressed mainly by the lifeless hands of the Tepe Hissar people will be dealt with in the final publication, in addition to such considerations as mortality during certain ages, proportion of males and females, and the like. There were hardly any well preserved skeletons in Stratum I. One of the tasks of the second season was to obtain good skeletal material of this early period as means of comparison with the numerous good skulls and other bones recovered in the upper strata. The entire osteological material will be worked up in America.

The mortuary equipment of the Hissar I dead consisted of painted bowls, jars, and cups, sometimes single or arranged in a group, usually near the head. A copper pin often stuck in the dirt filling of the vessels, or lay in the refuse close to the head. Seals or seal-shaped ornaments, single or in groups, had been deposited on the chests or on the arms of men and women while an amazing number of beads in forms of bracelets, anklets, necklaces and belts ornamented the dead of Stratum I.

The End of Period I

The most delicate phases of an excavation are those concerned with the top and bottom deposits of a stratum, which often contain the clues for

the beginning and the end of culture periods. The end of a period may have been due either to uncontrollable forces, such as famine, plague, or other epidemics, accompanied by emigrations, or it may have been brought about by dynamic changes due to the energy of a ruler or groups of the population, or, finally, invading foreign people may have erased in part or *in toto* the indigenous culture of a particular region and implanted their own.

Our clues suggest that the three pre-historic culture periods of Tepe Hissar ended in accordance with the three ways defined above. The numerous communal burials of Stratum III, and other clues, suggest that the last settlers were stricken by an epidemic; the ceramics and other categories of Periods II and III suggest that the former faded into the latter; while the people of Hissar II came as foreign invaders, implanting their culture on that of the settlers of Hissar I. There can be little doubt that the natives fought against the newcomers, but we found no traces of a battle in the top refuse of Stratum I. On the contrary, definite clues point towards mutual absorption of new and old features, for in the earliest graves of Period II we found, side by side, decorated vessels of Hissar I and black pottery of Hissar II modeled after the fashion of painted bowls and jars with stems and discoid bases.

There are not yet enough crania of Hissar I and II definitely to determine racial distinctions between the two people, but, as far as we could observe, pronounced long skulls appear in Stratum II, while broader skulls seem to have prevailed among the people of the Painted Pottery Age.

HISSAR II

The Stratum of the Early Gray Ware

Again we are simply estimating in attributing the arrival of the Hissar II invaders to the second half of the third millennium, though the only definitive chronological clue is given by the total absence of iron objects even in the latest graves of Hissar III.

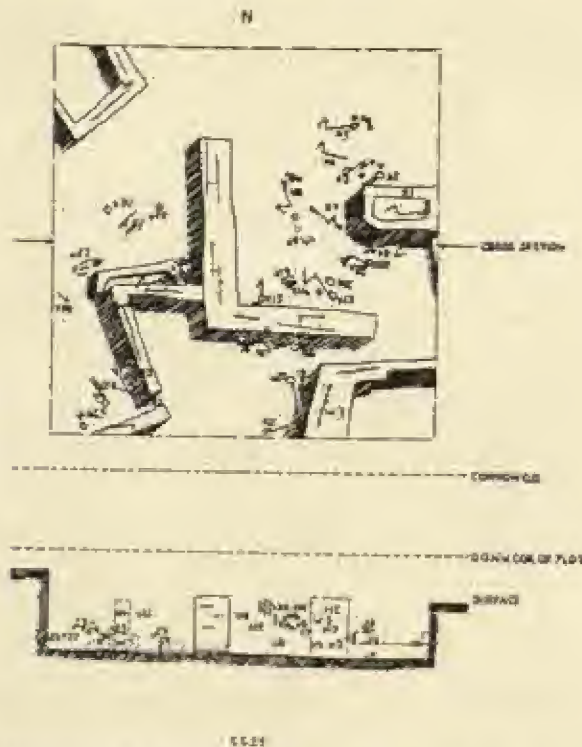


FIGURE B.—PLAN AND SECTION OF HISSAR II REMAINS IN SQUARE CG 25

The question as to the origin of the newcomers is not yet solved; but after certain eliminations we can offer a fairly plausible theory. We do not believe they came from Anatolia where, approximately during this time, the change from red pottery (Alishar I) to painted wares (Alishar III) took place, while in addition a foreign people (Alishar II) with pronounced Mesopotamian culture features appeared on the scene. Neither

are the Hissar II people a branch of the Mesopotamian culture tree, nor emigrants from the plains of Elam, nor from the mountains separating Iran and the Two River Land. Our clue points north. In Tureng Tepe near Asterabad, Dr. F. R. Wulsin⁷ uncovered in 1931 gray vessels, some identical with Hissar II and III pots, and many at least similar to them. As a rule, the vessels from Tureng Tepe are more elaborate and more lavishly decorated with burnished patterns than the Tepe Hissar pottery; but the two series of ceramics are decidedly related.

It is, therefore, our working theory, for the present, that the carriers of the Hissar II culture drifted south from Turkestan (which was not necessarily their center of diffusion) across the passes which at all times were the gates for invaders from the northern steppe.

Settlement and Building Remains of Hissar II [Plate XCVI]

The horizontal extent of Stratum II is not yet known. It is present, apparently, on all pronounced elevations, buried there below Hissar III remains, while in depressions and on the Painted Pottery Flat it often forms a thin top layer on Stratum I.

As to the buildings, what has been said about the soundings of the earlier town is true also for our knowledge of Stratum II. It was defined in test squares, though the task of uncovering complete buildings was postponed until the following season. The walls show, faintly as a rule, the joints of large, rectangular, straw tempered, bricks (dimensions, for example, .57 x .305 x .09):

Pottery Vessels of Stratum II [Plates XCVII-CH]

The chronological difference between painted pottery and gray ware as a whole was rather clear before we even started excavating. The distinction between Strata II and III, however, based mainly on differences of the shapes of gray vessels and paralleled by some other distinctions, was not made until late in the first season. Furthermore, due to technical reasons, namely, the abundance of burials, we did not succeed in penetrating through Stratum III to Stratum II, thereby determining the time relations of the two culture layers by direct sectioning. We had to obtain these results by applying indirect methods and testing the deposits crop-

⁷ Cf. *Excavations at Tureng Tepe, near Asterabad*, *Bull. Amer. Inst. for Persian Art and Archaeology*, Vol. 2, No. 1 bis, March, 1932.



PLATE XCVI

SQUARE CG 25—HOUSE REMAINS AND BURIALS OF HISSAR II

ping out from below the main mound. Thus we succeeded in striking Stratum I at points where it reached close to the surface, and, finally, Stratum II under equal conditions, mainly in Plot CG 25 [Plate XCVI].

The contents of the rather sterile rooms were of little help. The subdivision of the Gray Pottery Age was first based on the vessels deposited in the earliest graves of the new era. It was found that they contained great numbers of gray bowls, jars, and goblets with stem and foot, forms which were entirely absent in the extensive necropolis of Hissar III on the main mound. Two exceptions will be referred to in the chapter on Hissar III pottery. Re-checking of the burial gifts showed that in the first test plots identical stemmed vessels had been found in the lowermost graves of the gray pottery deposit.

If there was any proof wanting as to the earlier character of the graves with stemmed vessels, as compared with the burials on the main mound, painted vessels which occurred in several graves of the last Hissar I persons associated with the stemmed gray pots of the newcomers, dispersed all doubts.

At the present state of our knowledge we can consider only the gray



bowls, jars, and goblets with stems and expanding bases as typical for Stratum II. As to technique, they show the same pronounced wheel marks as the Hissar I vessels, while, an almost inexplicable phenomenon, most of the later pots of Period III seem to have been modeled by hand.

It is a striking fact that the shapes of many Hissar II bowls and jars are absolutely identical with the forms of the preceding painted ware. We may see here the influence of the native woman adapting the old ware to the taste of the newcomers by preserving the form, seemingly not disagreeable to the foreigners, but dropping the decoration and changing the firing or the clay and thereby the ground color to a shade to which they were accustomed. This is a theory based on the fact that women usually were the pot makers before the era of industrialism. In ancient times the women of a conquered people were always considered spoils of victorious invaders, and, in turn, certainly influenced those handicrafts of the foreigners which belonged to their domain.

Again, the bowls and goblets with exaggerated tall stems do not appear in Stratum I. Series of small knobs, derived, doubtless, from *repoussé* work on metal vessels, are also newly introduced.

Many footless vessels resemble pots of Stratum III, or are actually identical. For this reason they cannot count as guide specimens, though certain varieties may still prove to have distinct features. Such types are cups, small jars, bowls and pitchers. They are plain gray, as a rule, but some have simple incised patterns. One bowl is corrugated and some small jars are supplied with bill spouts.

We will consider, finally, the important painted vessels [Plate CH] found in early Hissar II graves together with gray vessels and a few that occurred under similar conditions, attributing them likewise to that time. Burial x-1 in Plot CG 95 was supplied with a gray stemmed bowl lying beside Bowl H 1654, decorated with dark gray brown paired angles on a brown and buff shaded ground. Cup H 1655 lay beside and below the painted bowl. It is decorated with a dark brown pattern on buff brown ground. There are carelessly drawn elements which our mound idiom calls 'browsing gazelles' (compare H 1141, Hissar I pottery), interchanging with parallel angles. Cup H 1365, painted red brown on a light buff ground, shows apparently the last step of our conventionalized 'standing gazelle' design before it has been reduced to simple vertical lines, persisting then with the color shades of the specimen under consideration on the same or slightly modified cup form to the very end of Period III. The cup occurred as a single mortuary gift of x-6, Plot DH 21. The burial was considerably above the floor of the last occupational level of Hissar I.

Cup H 1154, painted grayish brown on a lighter shade of the same color, has a 'tongue' pattern, frequently appearing on sherds from transitional Hissar I-II refuse. A small gray Hissar II jar stood partly inside the cup. Both were gifts of x-15 in Plot CG 25. There is one more cup (H 515) which we will consider in detail, because it represents a type extremely frequent in pure Hissar I burials. Its decoration consists of purplish red lines radiating on red brown ground from the pointed bottom to the lip. It occurred in a grave with plain (or abraded) red pots and gray stemmed vessels. The little, spouted jar, H 1384, occurred close to a grave in the Hissar II burial layer, while jar H 1153 was again directly associated with Hissar II vessels in the same grave.

We find it necessary to give rather detailed descriptions of these vessels and their find conditions in order to convince the reader as we had to convince ourselves, that, first of all, Period I was succeeded by Period



H 1554



H 1607



H 1581



H 1671

HISSAR II BOWLS, BOTTLE PITCHER, AND JAR. SCALE 1:3



H 1149



H 1630



H 1150



H 1604

HISSAR II BOWLS AND GORLET (H 1149 AND H 1150 FROM BURIAL CG 25, X-1). SCALE 1:3



H 1517



H 1505



H 1504

Hissar II Jars on Concret. Scale: 1:2; H 1500—1:4



H 2

H 4



H 1



H 2



H 5

LATE HISSAR II VESSELS. SCALE 1:3



H 1071



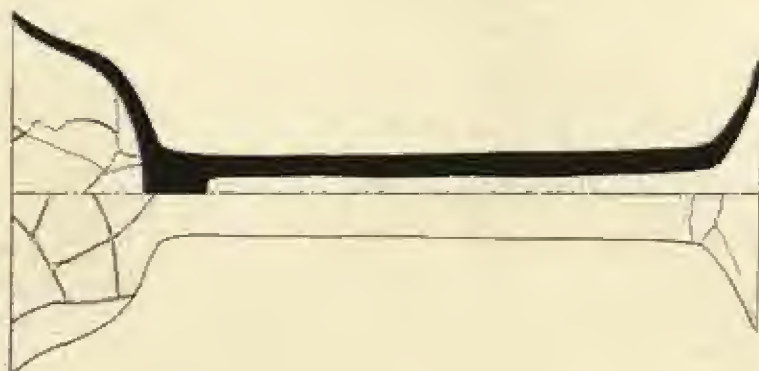
H 1077



H 1066

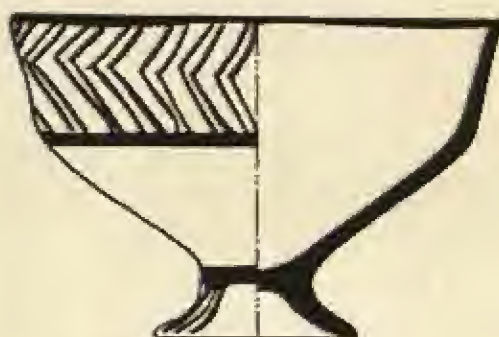


H 1022



H 1068

HISLOP II BOWL, JARS, AND CANTERS. SCALE 1/4



H 1654



H 1365



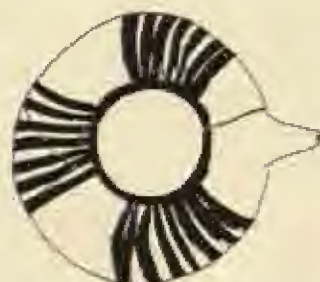
H 515



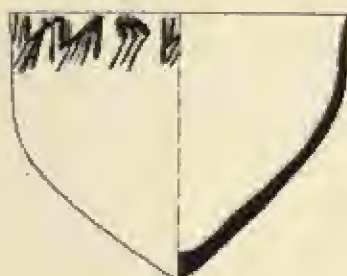
H 1134



H 1384



H 1284



H 1055



H 1111

HISAR II SURVIVING OR TRANSITIONAL FORMS. SCALE 1:3

II without any lapse of time and that mutual absorption of certain ceramic features took place, doubtless paralleled by others, less tangible or more difficult to prove.

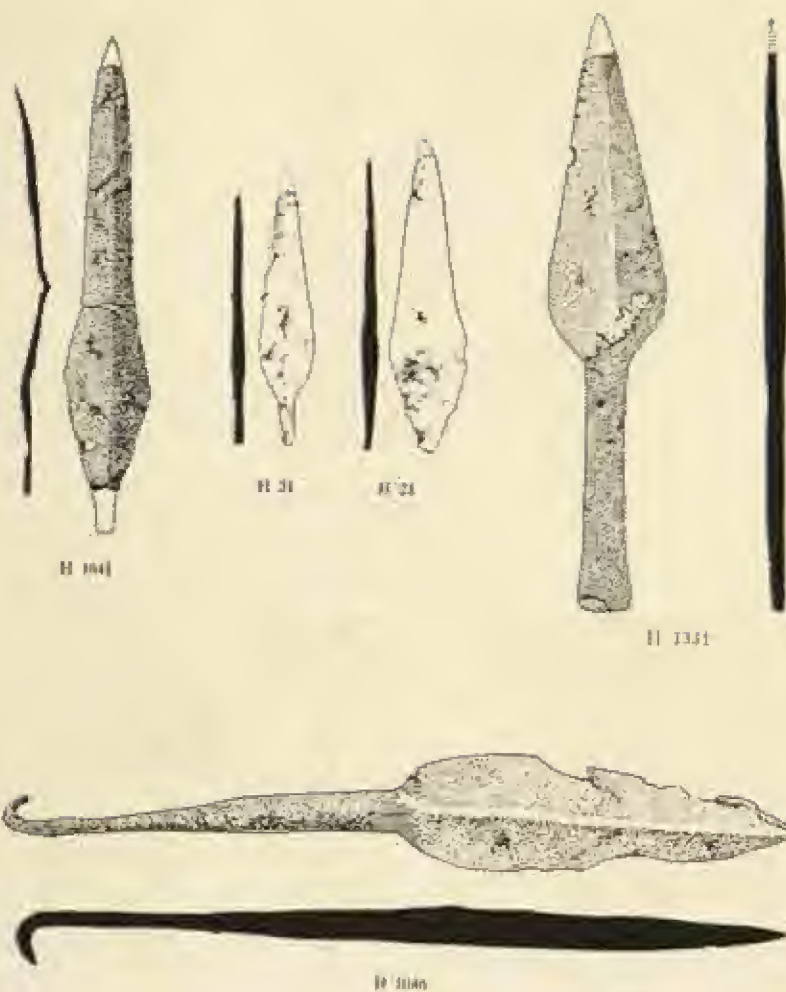
Metal Objects of Stratum II [Plates CIII-CV]

The superiority of the Hissar II coppersmiths over those of Hissar I is noticeable at a glance. The splendid mace head (H 1200) once deposited close to the head of a dead Hissar II warrior, may count as a symbol for the superior arms and workmanship of the people newly grafted on the old Iranian culture tree. Incised zigzags and eight-pointed stars decorate the heavy and efficient club head.

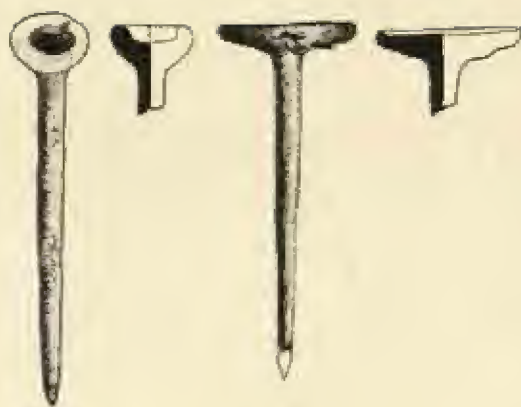
In the shapes of pins the Hissar II people excel over both Hissar III and I, as far as we know at present. Pin heads in forms of double scrolls or double loops are typical for the period. The four attractive specimens illustrated (H 1168-1171) all lay close to the chest of a skeleton, x-1. Plot CG 25, the mortuary equipment of which we will enumerate in the section on the Hissar II dead in order to present a series of directly associated objects, so valuable to the archaeologist. Pins with double loop heads, such as H 585, are also favorite mortuary gifts of Hissar II, while the odd, thick stemmed 'nails' with broad concave heads are likewise products of Period II workmanship.

The daggers or knife blades found to date in this deposit are somewhat puzzling. Blades H 1040 and 1041 were found side by side. The almost exact replica of the former specimen occurred in pure Hissar III graves, while the latter seems to represent a distinct type. Again, blade H 1351, found among the mortuary vessels of a distinct Hissar II burial, is paralleled, but for its pronounced medial ridge, by several definite knives and daggers of Period III. There are several explanations: either these blade-forms persisted, or they are 'technical intrusives' in Stratum II (for instance, buried by Hissar III people), or they belong to the phase of transition from Period II to III. At this point the question rests, at present.

Points of the type illustrated may have served different purposes. Specimen H 96, for example, may have been used as a tracer or perforator. A polished bone tube forms its handle.



Hissar II Copper Blades of Daggers or Knives (and Spearhead(?))—H 1040). SCALE 1:3



H 313

H 334

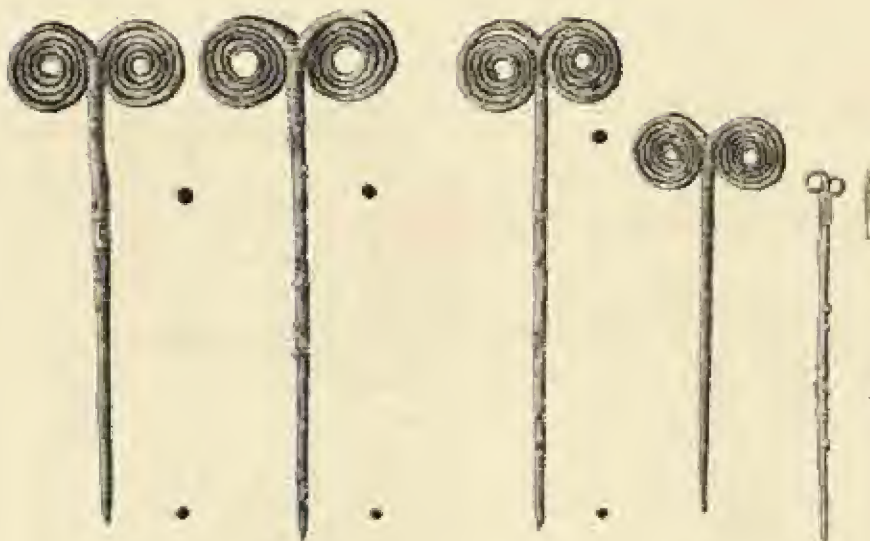
A.—HISSAR II COPPER 'NAILS', SCALE 1:3



H 32

H 96

B.—HISSAR II COPPER POINTS, SCALE 1:3



H 1160

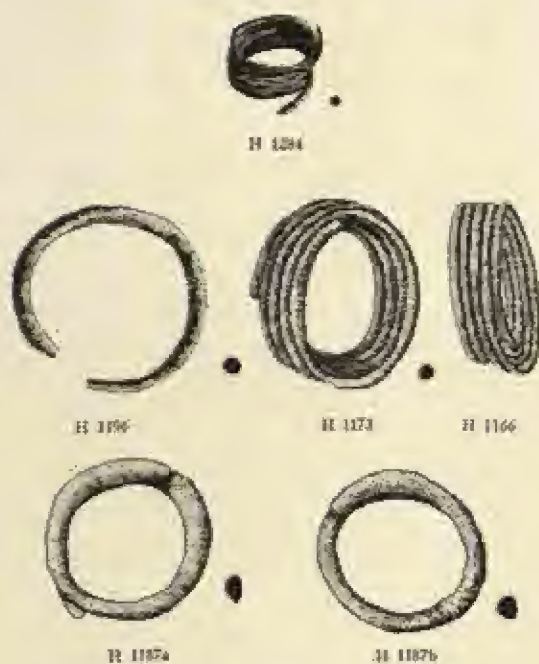
H 1162

H 1170

H 1171

H 583

C.—HISSAR II COPPER PINS, SCALE 1:3



A.—HISSAR II COPPER BRACELETS. SCALE 1:3



B.—HISSAR II COPPER MACE HEAD. SCALE 1:3



C.—HISSAR II COPPER ORNAMENTS. SCALE 1:3



D.—HISSAR II SILVER AND LEAD (H 342) OBJECTS. SCALE 1:3

Bracelets of thick copper wire wound spirally to form as many as six coils were frequently ornamenting the arms of the dead of Hissar II, and in one case anklets of the same type occurred. Relatively large, thick copper rings served as ear pendants, but some of the smaller, coiled earrings of Hissar III appeared also in this earlier Stratum.

Typical ornaments of this period are pendants, supplied again with lateral scrolls and with a central loop for suspension. Tubular pendants (?), occurring usually near the chins of skeletons, and tack-shaped ornaments are considerably more frequent in Hissar III, but they were found in Hissar II also.

There remain finally objects of silver and lead [Plate CV, d]. Both metals occur first during this period. All silver objects are ornaments, such as pins, a bracelet in form of a band perforated at the ends, oblong and ring-shaped beads, and the Hissar II scroll. The find conditions attribute also an elliptical object of lead (H 342) to the second stratum.

Seals of Stratum II [Plate CVII]

During Period II the first copper seals appear at Tepe Hissar. The unusually large seal, H 1176, lay beside a skeleton with typical Hissar II pots and pins, while the second specimen illustrated was found 'floating' in the bottom refuse of the stratum. Both seals show the well known filled cross as a sealing pattern.

Hissar II Figurines [Plate CVI, c]

We found no outstanding pottery sculptures in the stratum under consideration. Human effigies are absent and the clay animals are represented by the same (often undefinable) bovine, ovine and canine figurines which occur in all strata of Tepe Hissar and in many other parts of the world.

Stone Objects of Stratum II [Plate CVI, a]

But for a muller of unusual discoid shape and a whetstone with lozenge-shaped cross section, we do not have to illustrate any of the stone objects of this stratum. There occurred the usual celts, chalcedony flakes, small globular stones, perhaps used as sling shots, further, polishing stones of various shapes and perforated disks.



A.—HISSAH II STONE OBJECTS. SCALE H 1576—
1:12; H 19—1:3.



B.—HISSAH II POTTERY AND BONE
(H 33) OBJECTS. SCALE 1:3.



C.—HISSAH II POTTERY FIGURINES.
SCALE 1:3.



H 1176



H 220

A.—Hissar II Copper Seals. Scale 3:1



H 1164a

H 1164b

B.—Hissar II Beads from Burial CG 25, X-1. Scale 1:1



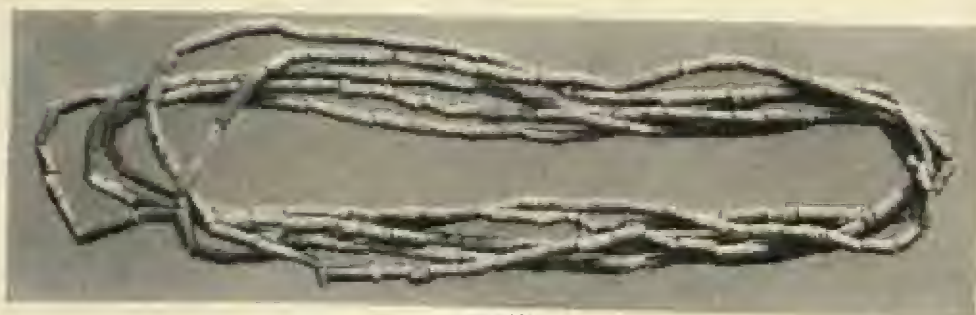
H 590



H 1203



H 514



H 1240

HISSAR II STRINGS OF BEADS. SCALE 2:3

Whorls, Miscellaneous Clay and Bone Objects of Stratum II
[Plate CVI, B]

There are few objects of these categories. We do not yet know whether the pottery disk or the roughly globular alabaster whorl are typical of the time. Slender clay cones occur in all strata, spool-shaped objects, such as found, are uncertain guides, and the bone awl illustrated is an omnipresent utensil.

Ornaments of Hissar II [Plates CVII and CVIII]

In addition to the bracelets, anklets and pendants of copper and, more seldom, of silver, the Hissar II people were covered almost as much as their predecessors with necklaces, armlets, bracelets, and pendants of the same materials mentioned in connection with Hissar I ornaments. The beautiful blue lapis lazuli has so far not been found prior to Period II. Its color matches attractively with the brown-red carnelian, the translucent mountain crystal, the white, sometimes iridescent frit, gypsum and alabaster. Some turquoise, serpentine, bitumen (?) and natural shells of olivella form were also wrought into Hissar II ornaments, the shapes of which remained about the same as those of the earlier types.

The Dead of Hissar II [Plates CIX-CXI]

Stratum II was primarily defined by the mortuary equipment of the early graves in the bottom remains of the gray pottery deposit. About thirty burials found in the same layer in Plot CG 25 gave conclusive evidence as to the main distinctions between Strata II and III.

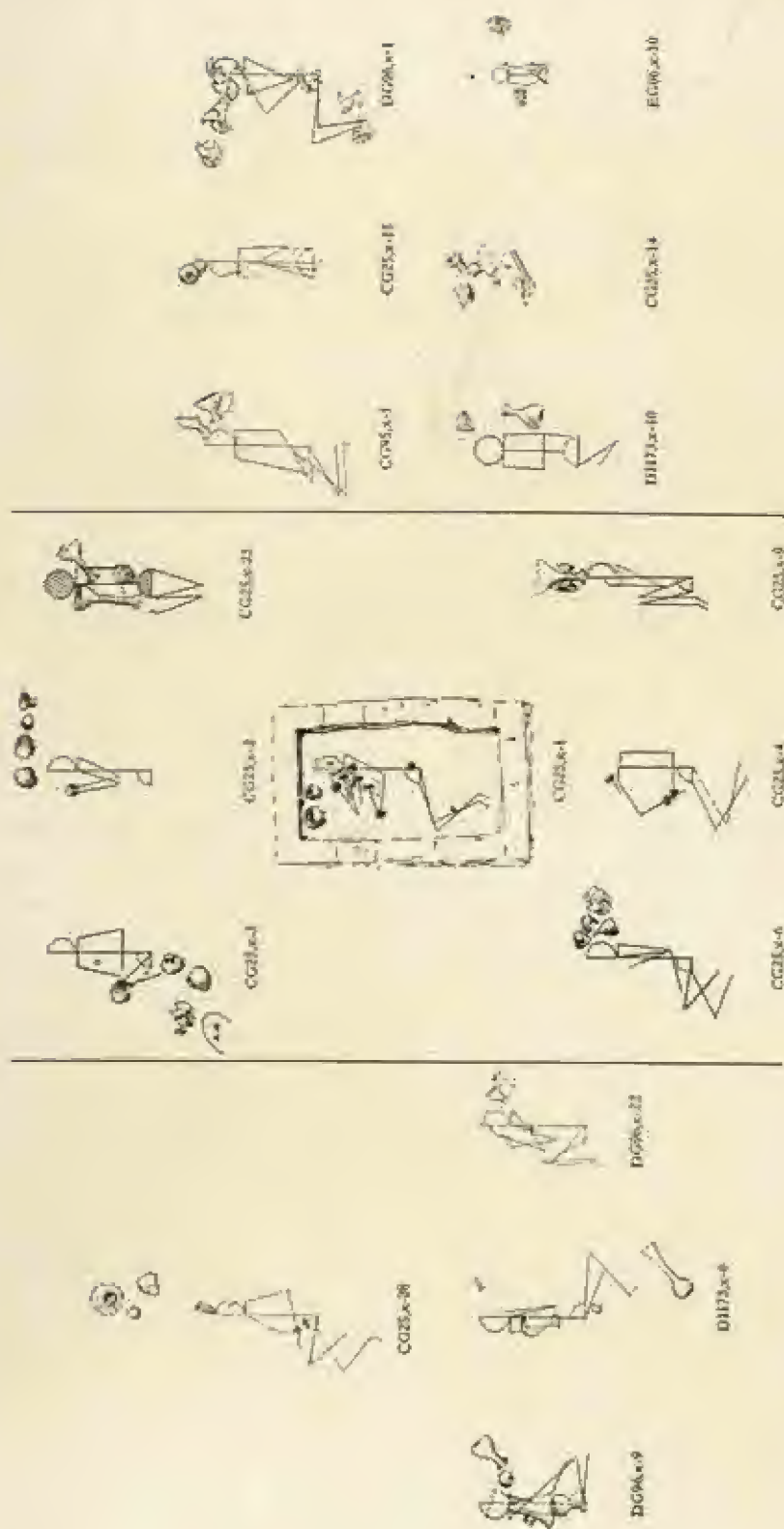
Footed bowls, jars and goblets, in addition to less characteristic types of pottery, accompanied most of the skeletons. In certain cases, some of the last painted vessels of Period I rested beside the gray pots that in time were to displace them almost entirely. Strings of beads, identical in part with those of Period I, were in the same graves with the new types of pins with scroll heads, with large copper earrings and coiled copper bracelets apparently not worn by the Hissar I People. The best equipped burial, CG 25, x-1, illustrated individually and shown, further, among the enclosed schematic drawings, was supplied with the following gifts:



HESSE II BURIAL WITH TRANSITIONAL OR SURVIVING PAINTED CUP TOGETHER WITH GRAY JAR



Hissar II B, 1914, CG 25, x-4



HISSAB II BEHAL, SCHEMATA

at the head end of the thin-walled mud-brick cist stood a footed cup (H 1150) and a footed bowl (H 1149), containing a broad-headed copper nail (H 1163). Beads of a necklace (H 1164) presumably, lay close to the forehead while another string (H 1172) may simply have been deposited in front of the chest. There were lapis lazuli tubes, carnelian disks and bicones, a ring-shaped turquoise, brown stone rings and disks, frit tubes and disks, shells, and gypsum disks, many coated with bluish green glaze. Copper bracelets (H 1166, 1173) ornamented both wrists. Four large copper pins with double scroll heads (H 1168-1171) lay on and in front of the chest. Two rather large earrings (H 1165) stuck to the right auditory region, while two more (H 1175) had dropped to the right humerus. An unusually large stamp seal (H 1176) of copper lay below the left pelvic bone. A silver band (H 1167) extended from the jaw across the fingers of the right hand, and a little silver scroll (H 1174) was below the left tibia. The skeleton belonged to an adult person advanced in years, identified as male, though the mandible and the long bones were rather feminine.

The legs of the Hissar II skeletons were, as usually, contracted, but the position of the bodies varied. True, many skeletons lay on their right side, like those of Hissar I, but often others lay on their left side or were disposed dorsally or ventrally. Neither was there a definite rule concerning the position of other parts of the body or as to orientation.

We found the burials under the floors of the rooms, in plain earth or, in a few cases, in thin-walled mud-brick cists.

The End of Period II

Certain guide forms of pottery vessels and metal implements define Stratum II. Certain pot forms, metal tools and weapons, alabaster vessels as a whole, elaborate copper seals and the like, occur only in Stratum III. But there are quite a number of pottery vessels and other objects which we cannot definitely attribute to one or the other stratum. We have, thus, not found a definite break between the two archaeological periods, and we assume for the present that the people of Period III developed and elaborated the culture products of their ancestors from the north, and, at the same time, adopted certain features from their contemporaneous neighbours. At any rate the archaeological situation suggests that Period II faded into Period III.

HISSAR III

The Stratum of the Late Gray Ware

The Iron Age began in Persia, according to our belief, during the second half of the second millennium B.C. This is solely a logical conclusion on our part, without a decisive proof. Our belief is based on the fact that during this period, that is, between about 1500 and 1200 B.C., the armies of the Hittite Empire in Anatolia were equipped with weapons of iron. They were carried beyond the borders of the peninsula into Syria and Mesopotamia in victorious campaigns, and their superiority was certainly acknowledged by the rulers of other countries.

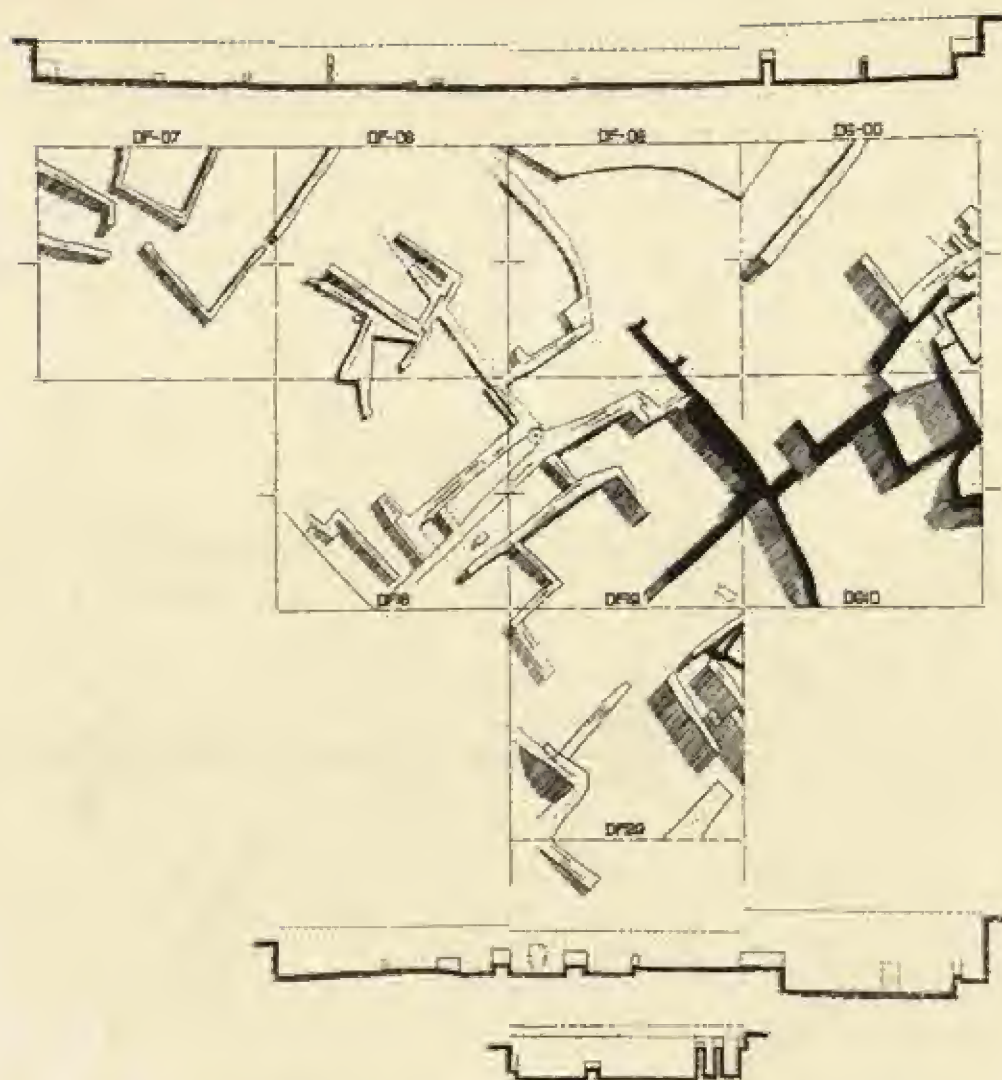
As a matter of fact, we know from an inscription that an Egyptian king demanded iron weapons from a King of Hattushash, the Hittite capital. Thus we conclude that iron implements, at least, spread rapidly over the ancient countries of the Near East, soon to be followed by actual manufacture at various points, far apart.

The active people of Hissar III had doubtless relations with the West, as we will point out at various occasions. If iron had been known in the western countries in any practical quantity, Stratum III, we are sure, would have contained objects of iron. We are, therefore, attributing Period III of Tepe Hissar to the first half of the second millennium and hope for trade objects from the west which will date the highest developed pre-historic culture of Tepe Hissar more accurately.

Period III lasted long at Tepe Hissar. There are several superimposed occupational levels and sub-levels containing the characteristic pots and other guide objects of their time; but so far we caught glimpses only of the varying fate of the Hissar III population as expressed by their structures and their graves. Again, the report on the second working season will shed more light on this absorbingly interesting period.

There are few features of the material culture in which these people did not surpass their predecessors and there are various clues suggesting that their material achievements were paralleled by elaborate mental activities as well.

The cult objects and vessels of alabaster, sometimes exquisitely modeled, are not matched by a single find of similar nature from the earlier



HISSAR III—PLAN OF STRUCTURAL REMAINS ON THE MAIN MOUND—LEVEL 3 MARKED
IN SOLID BLACK

strata. Stratum III, only, gave us such finds as cylinder seals (probably imported), elaborate stamp seals of copper, large copper vessels, frit cups, bidents, mattocks, hollow chisels, of copper, elaborate figurines of silver, copper, and stone, a silver diadem, and composite ornaments of copper or lapis lazuli with gold.

Settlement and Building Remains of Hissar III [Plate CXII]

Stratum III was mainly investigated during the 1931 season in that section of the deposit accumulated on the main mound, but later work made it evident that it extended over most or all elevations of the site.

The plan of the excavated complex shows rather senseless groups of walls and wall fragments. Rooms are defined at a few spots only, while complete buildings are not traceable at all. The causes are twofold. The exposed uppermost level was almost entirely razed by the elements aided perhaps by human hands. A few low wall fragments only were left (Sub-level 1a). Most of the structural remains shown on the plan belong to Level 1, which was destroyed largely by the hundred and eighty burials belonging to the last phase of Period III. We shall refer to these burials in the chapter on the disposal of the Hissar III dead.

However, those parts of the lowermost occupational level (2), uncovered during the first season and marked in black on the plan, promised rather well-preserved building remains, which were cleared during the continuation of the work, and will be described in a more detailed manner in the final publication.

Level 1 offers no points of particular interest. There are the usual mud walls with staggered bricks, the dimensions of which, as far as traceable, are rather close to those of the Stratum II bricks.

There are clues suggesting that at least parts of Level 2 were destroyed by fire. Blackened walls and vessels, and piles of bricks burned red by the heat, are buried below the upper layer of walls and refuse. Fire is a friend of the archaeologist. It scorches objects of perishable nature and thereby preserves them for the future.

Pottery Vessels of Stratum III [Plates CXIII-CXVII]

When praising the achievements of the Hissar III people, we purposely omitted their gray pottery vessels, because we do not consider them

superior to the ceramics of their predecessors. The most astonishing feature of Hissar III pottery is the apparent loss of the wheel technique. Neither magnifying glass nor finger tips discover the wheelmarks which are so pronounced on the Hissar II and I vessels. To be sure, there are vessels with rather regular horizontal striations, but they may be marks of a wooden rubbing tool turned with uniform pressure. Again, the smoothing or polishing of the vessels usually obliterates most wheel marks, yet some series are nearly always traceable. We cannot help stating that the potter's wheel, a decidedly practical device, apparently fell into disuse during Hissar III, otherwise far advanced in many features over the past culture periods.

One of the most typical Hissar III pot forms is the bottle pitcher [Plate CXIV], sometimes decorated with simple burnished or incised patterns. In several cases the neck base has a marked projection, definitely suggesting derivation from metal forms, though we never found its prototype in copper. The groove thus produced weakened the neck. It often broke and was attached again by means of perforations, at either side of the fracture, connected by strings of perishable material. Again, the neckless vessels with perforated rims may simply have been used as canteens.

The actual canteen, also a typical Hissar III vessel, is a tall pitcher with two suspension handles and a short bottle neck, plain, or burnished with the same simple patterns, occurring on many Hissar III pots.

There are two other characteristic vessel shapes, a graceful vase cup [H 794, Plate CXV], and a stemmed brazier or charcoal carrier with perforated walls [H 1032, Plate CXV]. As to the remaining forms we can only state that the particular vessels here illustrated were found in Stratum III. Since we noticed several of these shapes also in Stratum II, they cannot be considered characteristic for either period. In due time we will succeed in eliminating earlier and later variants.

As to cups, the almost hemispherical shape is most frequent. Cup-jars, such as H 880 and H 1020 [Plate CXVI], also occurred in many graves. The two specimens illustrated are burnished and incised, but most vessels of this shape are plain gray, as with the bulk of all Hissar III ceramics.

There are, further, large oblong jars, small jars with globular, oblong or biconoid bodies, plain, incised or burnished. Some small jars, cups or



H 557



H 1000

Hissar III Burnished Canteen and Jar. Scale 1:3



II 014



II 031

HUSAN III Botta Prochius, Scale 1:2



II 030

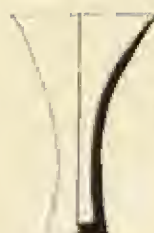
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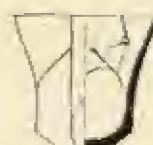
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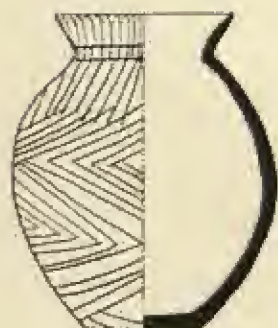
H 794



H 790



H 1112



H 667



H 833



H 1030



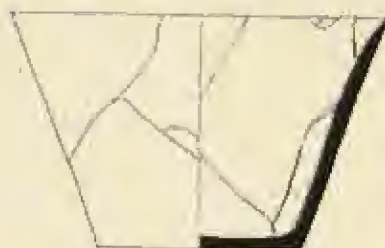
H 1019



H 783



H 1032



H 873

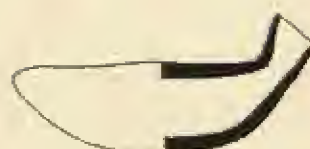
HISAR III VESSEL FORMS, SCALE 1:3



H 503



H 1024



H 468



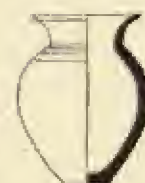
H 1020



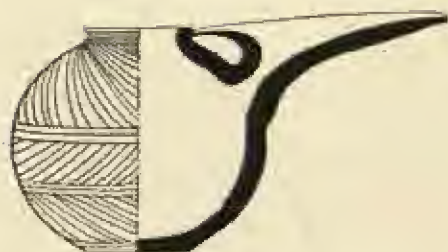
H 880



H 899



H 213



H 420

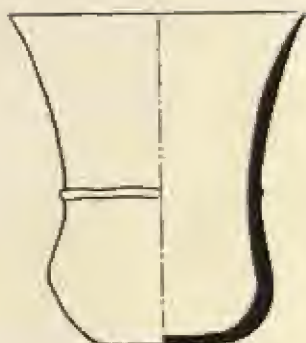


H 469



H 59

HISPAK III VESSEL FORMS. SCALE 1:4



H 66



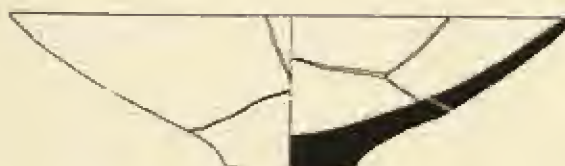
H 270



H 72



H 1626



H 1637



H 642



H 1060



H 1631



H 1115

VESSEL FORMS FROM STRATUM III, INCLUDING PAINTED CUPS AND POTSTAND
OF SURVIVING TYPE. SCALE 1:3

bowls have a horizontal or elevated bill spout. Specimens such as H 502 and H 420 [Plate CXVI] remind one of Luristan vessels with highly conventionalized birds' heads as spouts. Here we must add that we found not a single bowl, cup, pitcher, or jar, in any stratum of the mound, supplied with a handle which would accommodate several fingers or the whole hand. Only holes for suspension, or grips of ladles occur.

Coarse vessels of bowl or jar forms (H 1388, 1026) were used as cooking pots, better wrought bowls presumably as food dishes, while tall storage jars (H 1581) held grain, water, and the like. A duck-shaped vessel and a tripod cup are unique specimens; the little bottle pitcher and cup [H 210, H 12, Plate CXVII] represent quite faithful miniature editions of the utilitarian Hissar III vessels. They are trial pots, perhaps made by small girls learning the art of their mothers.

We turn, finally, to the last four vessels on Plate CXVII which, according to their decoration or form, are entirely out of place in Stratum III. Nevertheless, the cups with red-brown, sometimes purplish lines on light brown or buff ground occur almost as frequently in the rooms and graves of Period III as the typical bottle pitchers of their time. There is little doubt that this surviving cup of Period I type had a definite, perhaps ritualistic purpose, a phenomenon well known in culture history. A pot-stand decorated purplish-brown on a light brown ground falls into the same category. It was found on the main mound in a burned room of Level 2.

Two Hissar II pots [H 1637, 1636, Plate CXVII] that strayed somehow into a grave of Stratum III, conclude this section. We are rather sure about the manner of their intrusion. They were probably found and re-used by a person of Period III. As a matter of fact, the shallow bowl (H 1637) was originally footed in the same manner as the second vessel. The fracture at the body base was neatly re-ground and the vessel served as an attractive flat bowl to its presumably secondary owner. At the same time we may mention that a mixture of Hissar II and III vessel types in the bottom deposit of Stratum III is to be expected.

Metal Objects of Stratum III [Plates CXVIII-CXXIII]

Hissar II workmanship in metal excelled over that of Hissar I. In turn, the people of Hissar III by far surpassed their predecessors in metallurgic skill and in the variety of metal products.

We shall at first describe the copper weapons with which the Hissar III warriors were once equipped. There are the bidents [H 775, H 166, Plate CXX] 1.15 and 1.297 long. Both lay in warriors' graves. One was as undistorted and elastic as in ancient days, when its bright copper color was not yet covered by its present coating of green oxide. The second bident had been 'killed' by those who survived its owner. The long stem is bent and broken and the tines are twisted with great force. We are glad that this custom of killing the belongings of the dead was not carried far. It is a phenomenon known also in other parts of the ancient world. For instance, the most exquisitely decorated pottery vessels made in pre-Columbian North America are those of the Mimbres Valley in New Mexico. The vessels were usually killed by crushing the bottoms, which often carried the principal design element. To the excavator, such a custom is, of course, detestable. Returning to our bidents, we may mention that a specimen identical with the above mentioned complete bident is in the Gulestan Palace in Teheran. We were told that it had been found with the 'Sumerian Treasure' of Tureng Tepe. It is possible, however, that it came from Tepe Hissar together with typical pottery vessels and alabasters of our mound which are in the same collection.

Remains of the wooden stem were found inside a well-wrought mace head [H 771, Plate CXVIII and CXX]. Its principal, globular part was made more powerful by additional oblong protuberances, while series of parallel ridges ornament the tubular part.

Lance or spear heads are illustrated by specimens H 769 and 770. They are socketed or stemmed with bent-over, expanding bases for fastening in the weapons' shafts. Knives follow next. The larger ones may, of course, have been used quite efficiently as daggers. A single, copper arrow point (H 111) occurred in the top layer of the 'Twin Hillock'. We illustrate it here since it was found in Stratum III refuse; but we believe it to be of later date. Though it seems strange, the typical arrow heads of Period III were neatly wrought stone points described in a following section.

Implements of general use include exceedingly well-wrought and socketed mattocks [H 168, Plate CXVIII] of quite modern appearance, each with an axe and an adze blade. Tools of this kind may, of course, have been used for fighting as well as for peaceful occupations. Hollow chisels (H 169 and 766) are the most elaborate samples of a series of utensils

including plain, thin celts, large and small points, and nails or pins. The spoon (H 867) or stirrer rather, was found below a copper bowl in the grave of a small girl extremely well equipped with mortuary gifts.

In addition to ornaments of precious metals and great varieties of beads to be described below, copper objects were extensively used for personal adornment. A large copper disk [H 451, Plate CXXIII] would have qualified as a mirror had we not found coats of fibrous matter, suggesting fine basketry work on either side. The disk was ornamented with concentric circles stippled in *repoussé* fashion, and the arrangement of the fibrous coating followed the pattern of the metal. The plain handle suggests use as a fan. Had this object not been found with a richly equipped male skeleton one might have been inclined to define it as an exaggerated hairpin, since it leaned against the right lower and posterior part of the skull.

The 'fan' is unique, while the following categories of objects are frequent: Open or coiled rings and thin bands, of sizes for children and adults, form bracelets. Small coiled rings, single or double, were used as ear pendants. Copper tubes lie frequently at the neck or on the chests of skeletons, while tacks, single or combined, may have ornamented the arms or legs. To date the finger ring illustrated is unique in Stratum III. As a matter of fact, it occurred in the lowest deposit of the stratum. The pin with double loop head and the double scroll pendant are old acquaintances from Stratum II. They may be ornaments, surviving from the earlier period, or re-used specimens.

Gold and silver ornaments occurred, as a rule, in the best equipped graves only. The best sample of work in precious metals is the silver diadem [H 449, Plate CXXII] found on the forehead of the same skeleton that was equipped with the 'fan'. In delicate *repoussé* work a stag, a moufflon, an ibex, and other animals, no more definable, in addition to concentric circles, are pictured in individual panels which are separated by paired rows of stipples. Both ends were certainly alike, perforated and connected by a string across the back of the head.

The silver earrings, the tube, and the band are identical with copper ornaments, while the silver pins, found on the chest of the above mentioned little girl's skeleton, are unique.

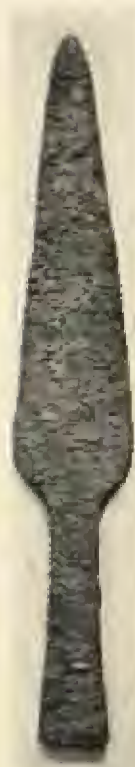
There are several sets of gold-sheathed, copper earrings, the gold cover being rather thin, as a rule. A small, crushed gold tube and a pendant



II 769



II 771



II 457



II 108

HISSAR III COPPER KNIVES OR DAGGERS, MACE HEAD, AND MATTOCK. SCALE 1:3



H 539



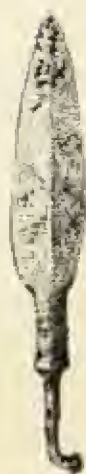
H 111



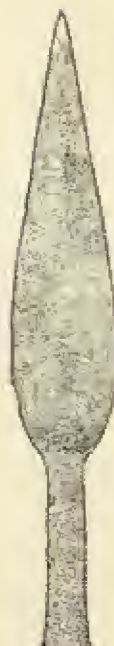
H 766



H 769



H 769



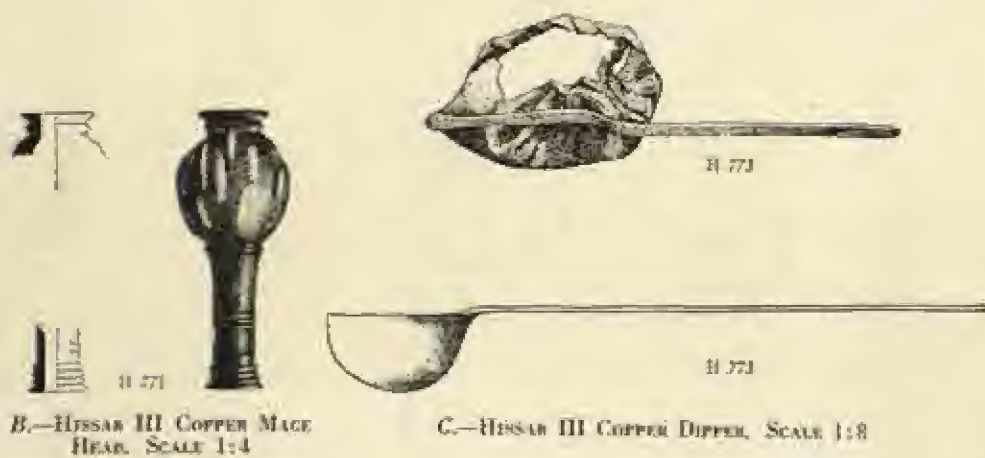
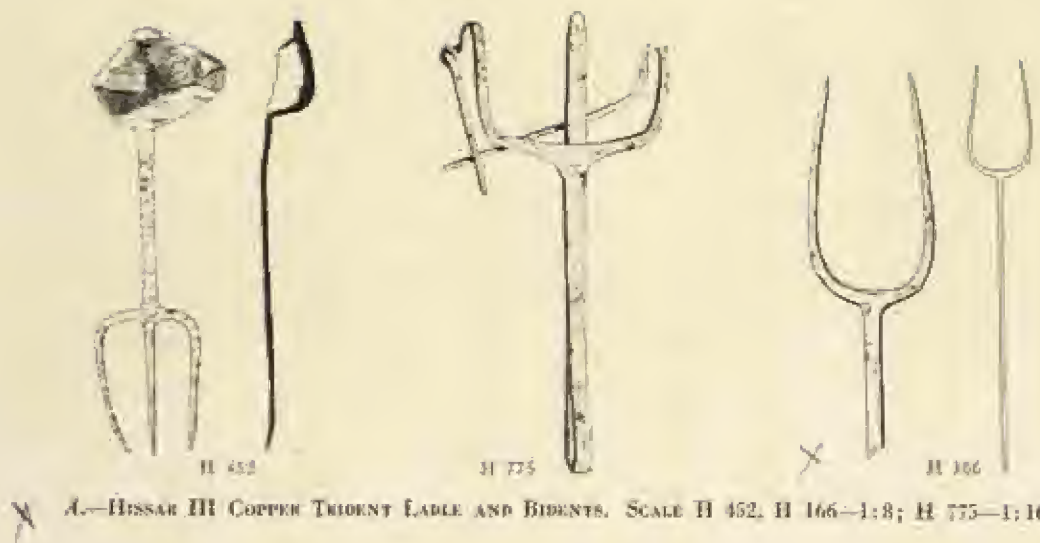
H 767



H 776



HUSSAR III COPPER KNIFE, ARROWHEAD, HOLLOW CHISELS, SPEAR HEADS,
AND DAGGER OR KNIFE. SCALE 1:4; H 539, H 111—1:2





H 367



H 119



H 190



H 276



H 229

A.—HISSAR III COPPER STIRRER AND POINTS.
SCALE 3:8



H 8



H 575



H 618



H 232



H 239



H 619

B.—HISSAR III COPPER ORNAMENTS.
SCALE 3:8



H 469

H 469

C.—HISSAR III COPPER
NAILS. SCALE ABOUT 1:4



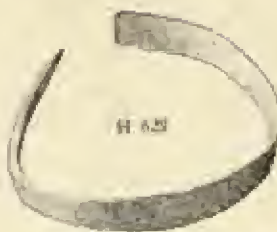
H 242



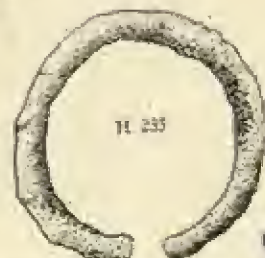
H 886



H 459



H 629



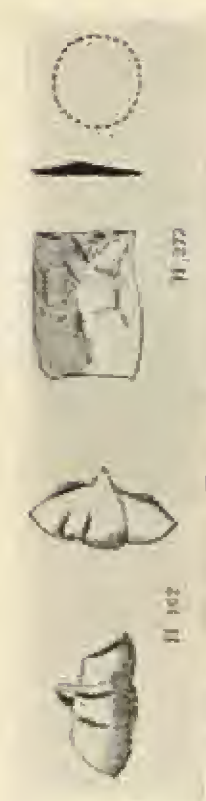
H 235

D.—HISSAR III COPPER ORNAMENTS. SCALE 3:8



H 419

A.—Hissar III Silver Tablet. Scale 1:2



H 102

H 372

B.—Hissar III Gold Ornaments. Scale 1:1

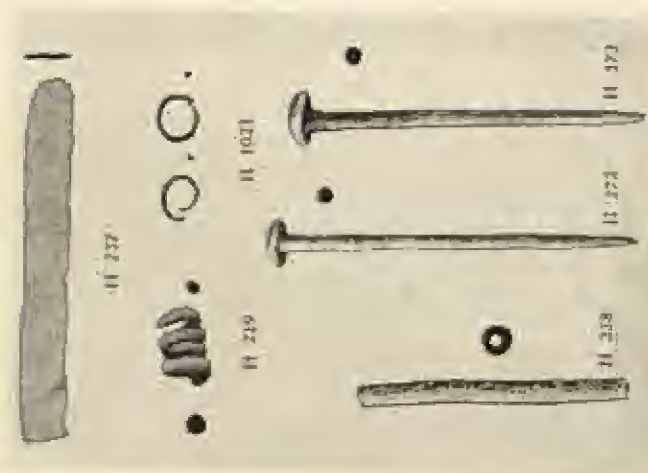


H 263

H 301

H 304

C.—Hissar III Gold Ornaments. Scale 1:1



H 219

H 1021

H 373

H 374

D.—Hissar III Miscellaneous Silver Ornaments. Scale 1:2

in leaf form were found in the refuse filling of rooms, while an attractive gold and lapis lazuli bead or pendant (described below) was in the little girl's grave.

Metal Vessels [Plates CXX and CXXIII-CXXVIII]

Vessels of silver, lead and copper occurred only in the graves of the wealthiest persons. As a matter of fact, one warrior (DF 19, x-2) and the little girl (DF 18, x-1) possessed all the silver vessels found to date.

The warrior's silver vessel was an attractive, though odd shaped, pitcher [H 173, Plate CXXIV], with globular body and a disproportionally long bill spout. As on all other silver objects, purplish gray patina had covered its surface, while greenish tints suggest impurities of the metal and an accidental admixture of some copper. All the other silver vessels illustrated [Plate CXXV] belonged to the little girl. Nearly all of the exceedingly frail, small pots are crushed by the pressure of the soil rather than by human hands, but our artist succeeded in restoring their forms theoretically.

There are small pitchers with globular or pear-shaped bodies and with bill spouts, small cups plain or with short spouts, and a biconical object open at either end.

The grayish white, lead cups [Plate CXXVI], brittle as a rule, crushed and corroded, have simple hemispherical or inverted conoidal forms.

The large thin-walled copper bowls [Plates CXXIII, CXXVII and CXXVIII] were in equally bad condition, but in several cases it was clear that they had been killed in the same manner as the above-mentioned bident. Roughly hemispherical forms prevail, but bowls with straight sides occur, while the rims are plain or bent over.

A copper object of oval form (H 171) with bent-in rim, which was accompanied by lead fragments inside and outside, roughly paralleling the contours, was tentatively identified as a helmet. It lay at the feet of a warrior (DF 19, x-2).

An interesting combined trident and ladle [H 452, Plate CXX] was probably used for culinary purposes. A ladle with long stem had been killed in the same manner as the bident and the copper bowls of the same grave. A small bottle [H 460, Plate CXXVIII] was presumably the pedestal for a copper wand to be described in the section on figurines.



U 431

A.—Hissar III Helmet-Shaped Vessel. Scale 1:3



U 432

B.—Hissar III Large Copper Bowl. Scale 1:6



U 433

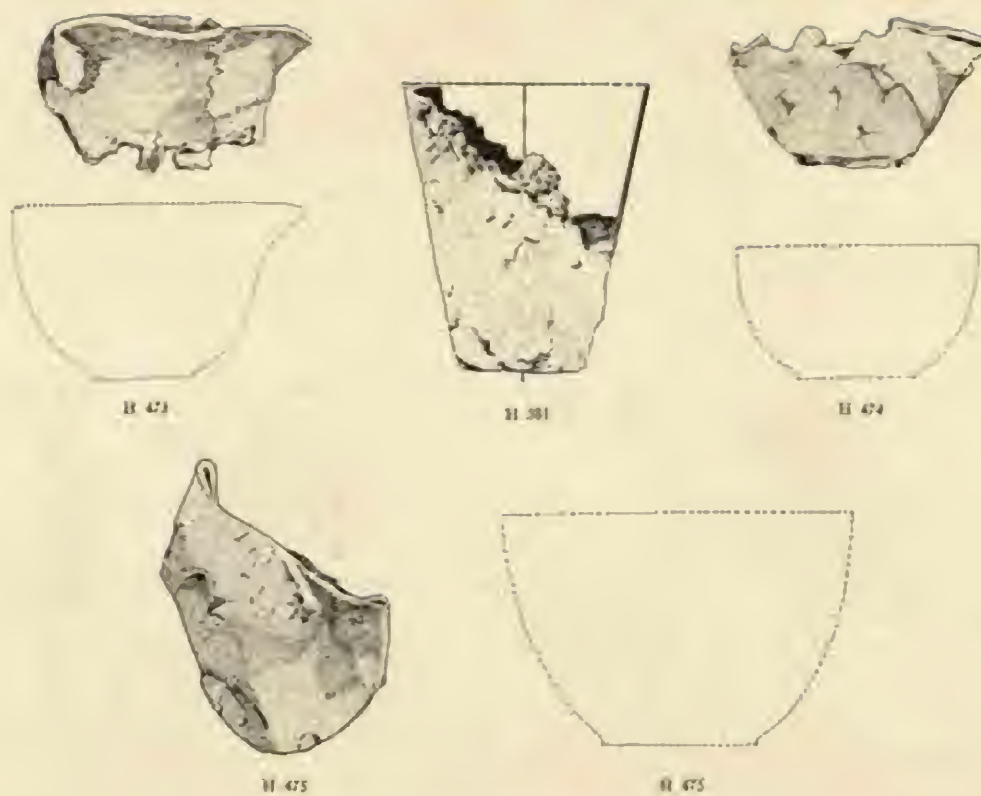
C.—Hissar III Copper 'Fan'. Scale 1:2



H. 124
USSAR III SILVER PINCHER. SCALE 2:3



HISSAR III SILVER VESSELS, SCALE 1:3



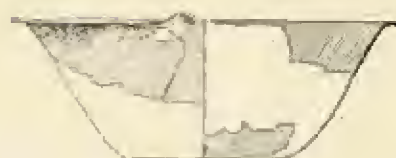
HISSAR-III LEAD CUPS. SCALE 1:3



H 866



H 776



H 774

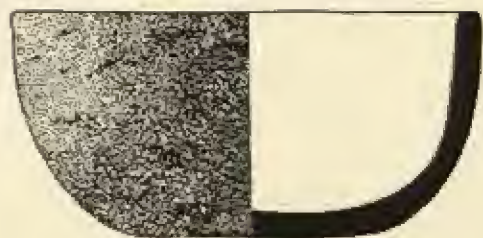


H 406

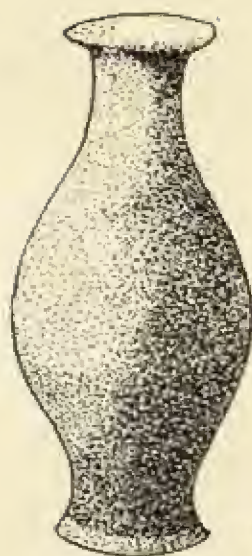


H 772

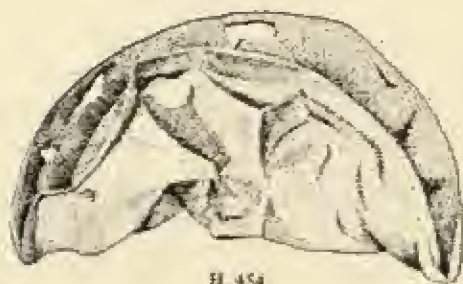
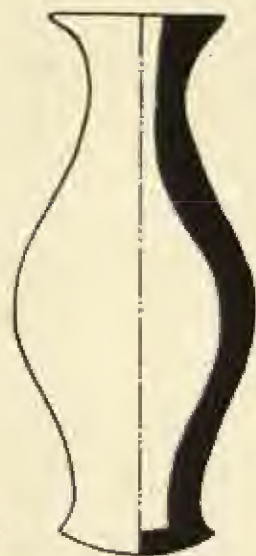
HINSAH III COPPER BOWLS, SCALE 1:3



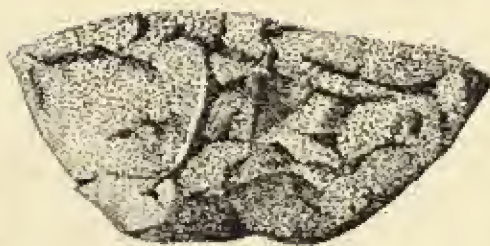
H 405



H 460



H 454



H 455



HISSAR III. COPPER VESSELS. SCALE H 405—1:2; H 460—1:1; H 454, H 455—3:8

Seals of Stratum III [Plates CXXIX and CXXX]

We do not believe that the two extremely important seal cylinders [Plate CXXX, B] are products of the glyptic art of the Hissar III people. One, made of serpentine and showing a bovine, a tree, a cross and angular elements, occurred in mixed Level 1 and 2 refuse of Stratum III, while the second cylinder, made of alabaster, was found in a grave of the uppermost level. Its sealing pattern consists apparently of a chariot carrying one person while a second person stands in front of the drawing animal, presumably a horse. Angular elements are below and above. Until comparative literature is available we can only suggest that these seals were imported from Mesopotamia. Perhaps they will help to date Period III more accurately than possible at present.

The characteristic seals of Stratum III are made of copper. They are stamp seals with rectangular or circular bases and roughly cylindrical perforated handles. Another typical variety is the 'medallion seal', shaped like a pendant with bilateral sealing pattern. Both types have deeply cut intricate patterns of interlocking and opposed animals. There are, further, circular alabaster stamp seals, reminding one in form and pattern of the Hissar I specimens. Concentric circles, simple or subdivided by radiating lines, form the patterns.

Hissar III Figurines [Plates CXXXI-CXXXIV]

The little sculptures of copper and silver, alabaster, serpentine and clay, reflect the artistic sense and skill of the Hissar III people. They are not matched by like products of the earlier occupants of the site.

'Wands' [Plate CXXXI]

The mortuary equipment of prominent persons always included a curious device which we call 'wand' or 'symbol'. It is a copper rod usually ending in a bulbous base, its head being modeled in form of one or more animals or animal heads, while simple, conoid symbol heads also occur.

A cross-shaped wand (H 170) stood in a small jar, filled with black powdered matter, in the first warrior's grave uncovered. The bars and



H 458



H 459



H 460

H 461



H 462

H 463

HISSAR III COPPER SCALES, SCALE 2:3



A.—Hissar III Medallion and Stamp Seals of Copper and Stamp Seals of Alabaster (H 518, H 215), Scale 1:2



B.—Cylindrical Seals from Stratum III, Scale 1:1

the top expand into birds or in animal heads. The second warrior's symbol was a short rod ending in two horned animal heads. In front of the chest of the repeatedly mentioned little girl lay a symbol with a well wrought ram, while a 'priest', so called by us on account of some unusual gifts, had two objects of this nature. The head of H 463 seems to consist of two figures not identifiable before expert cleaning. The second wand (H 461) is fragmentary and corroded. It lay beside a little copper bottle (H 460), described above, with an orifice just large enough to accommodate the rod. A double-headed ram decorated another wand (H 550) while two plain specimens with simple expanding heads conclude the series of these interesting objects. We are convinced that many of the beautiful metal sculptures from Luristan served identical purposes, though the meaning of the symbolism is still rather vague to us. Sometime we may find proof whether these wands are personal, family, or group symbols, badges of office, or the like.

Human Effigies [Plate CXXXII and CXXXIV, A]

The human form was represented in a highly conventionalized and stereotyped fashion only. At the same time it is obvious that all figurines falling into the class under consideration, represent females, judging by the pronounced breasts of the alabaster figurine, H 482. Perhaps we can see here again the widely distributed idea of fertility symbolized by woman.

The alabaster effigy was in the grave of the 'priest'. A perforation for suspension extends from the top of the head to its back. A small silver pendant (H 491) of similar form, with breasts faintly marked and with a bird on either shoulder, lay among the 'priest's' numerous ornaments. A silver figurine (H 379) with stippled *repoussé* work was beside the little girl's head, while copper figurine H 576 was in the grave of an adult man.

A copper object (H 563) of odd form may also fall into this category, though we are uncertain about its meaning. But for the resemblance to the somewhat less conventionalized metal figurines we would hardly be justified in considering the gray brown clay object (H 87), shown in Plate CXXXIV, a human effigy. Head and arms are marked by pointed stumps and the cylindrical body rests on a circular base.

Animal Figurines [Plates CXXXIII and CXXXIV]

Two silver figurines, suggesting a cow and a sheep, were at the little girl's chest. Both have collars, a fact which does not quite agree with the identification of the larger figurines, but it does not absolutely contradict it. A double-headed ram of copper was in the second warrior's grave, while a small dog (H 362) was found in the refuse of the upper level of Stratum III.

The ram with two heads, or the double-headed, horned animal in general, seems to have expressed a favorite symbolism of the Hissar III people. As a rule, the horn symbol implies great strength or power. The 'priest' was accompanied by two small, double-headed and two normal, miniature rams of serpentine, with vertical perforations for suspension.

A delightful array of small animal sculptures rested in the grave of the second warrior (DF 09, x-1). Six series of four almost identical animals were spread beside the bundled up weapons of the dead warrior. Four series, representing horse, tiger, bear and hen, are modeled of alabaster, while dog and raven(?) are made of unbaked, gray clay. Little alabaster pellets, scattered about, and one actually beside and partly below an alabaster hen, suggest eggs, an amusing thought.

Fur, wings, beak, eyes, and on the horse perhaps the harness, are marked on the alabaster figurines by incised lines and centered circles, with black or red incrustations. One clay figurine of the dog series resembles a chipmunk or a fox rather than a dog, while the 'ravens' may actually represent any similar birds.

In addition to the outstanding types of Hissar III figurines, the usual numbers of simple little clay animals occur which are about alike in all strata. We illustrate a few only: an exceptionally well modeled goat (H 23), a sheep(?) (H 416) with a series of depressions at the left side for attachment to some device, a freak figurine (H 201) suggesting a sleeping animal but probably an accidental 'artistic' creation due to squashing of the soft clay, and, finally an effigy spout representing a horned animal and promising the occurrence of interesting effigy vessels.

We mentioned in the chapter on Hissar I figurines that we believe in the magical purpose of the small animal effigies of Tepe Hissar. The Hissar III groups of figurines, particularly the warrior's 'game' and 'livestock', support this belief to a considerable extent.

II 179



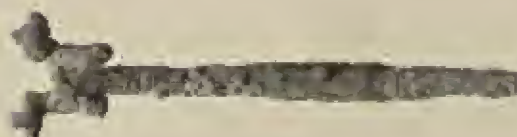
II 403



II 463



II 550



II 518

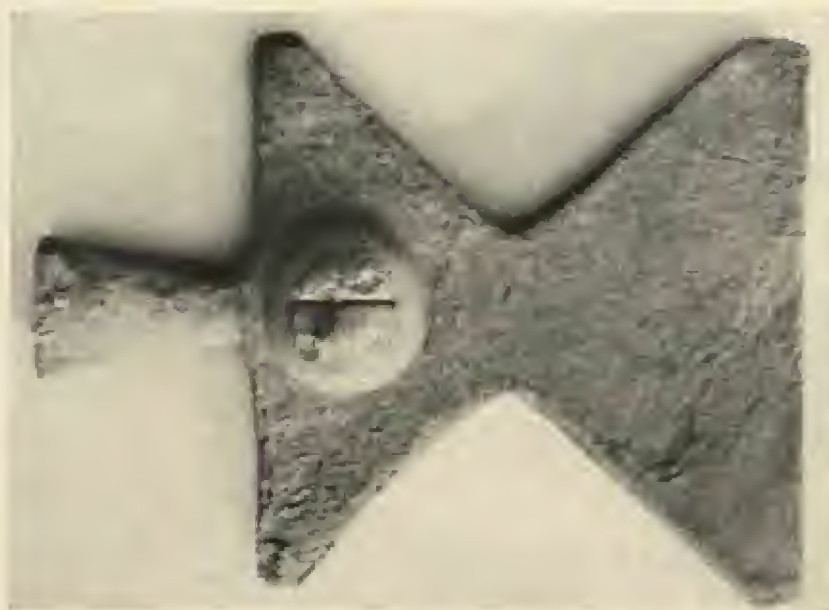


MISSIN III 'COPPER WINGS' AND COPPER RINGFALL. SCALE 3:4

II 400



H 376



H 382



H 401

HUMAN EFFIGIES OF HESSIAN III. SCULP. H 376 (CARRON)—1:1; H 382 (ALABASTER)—1:2;
H 401 (SILVER)—1:1



H 730



H 743



H 757



H 758



H 744



H 740



H 480



H 488



H 486

ANIMAL FIGURINES OF HUSSAR III. SCALE 1:1. MATERIALS: Horses (H 740), Hens (H 750), Tiger(?) (H 758), Bear(?) (H 757); Serpents (H 486, H 488, H 489); Clay: Dog (H 740), Raven(?) (H 744)



A.—HISSAR III HUMAN FIGURINES OF COPPER (H 563), SILVER (H 379), CLAY (H 87) AND TWO PLAIN COPPER 'WANDS'. SCALE 3:2.



B.—HISSAR III CLAY AND POTTERY FIGURINES OF ANIMALS. SCALE 3:8.



C.—HISSAR III ANIMAL FIGURINES OF SILVER (H 370, H 371) AND COPPER (H 763, H 362). SCALE 3:4.

Hissar III Vessels and Cult Objects of Stone [Plates CXXXV-CXLI]

We assume spontaneous western, that is, probably Mesopotamian, influence in the fact that during the last prehistoric period at Tepe Hissar suddenly stone vessels (mainly of alabaster and some of limestone) of highly elaborated forms appear, while in Mesopotamia stone vessels had been extensively employed for more than a millennium. Comparative studies will perhaps determine the accurate focus of diffusion of this and other foreign features of Period III.

An elegant alabaster 'fruit plate' (H 176) lay in the first warrior's grave. A groove encircles the side of the shallow, discoid top resting on a tall stem with hollow, conoid base. Shorter and less graceful variants of this type occur, in addition to footless plates, one of them being perforated through the center (H 1665).

Several jars with graceful, oval bodies and discoid rims (for example, H 536) and smaller, cruder jars with roughly globular bodies were found in the graves of the wealthy. Alabaster vessels in general were as much a sign of wealth as the large copper vessels above described.

The most delightful vessels are two little 'cosmetic jars' found in the grave of the little girl. Black incrustated concentric circles ornament the body and the conical lid. For attachment, two perforations in the lids correspond to two holes at the rims of the vessels. An unusual, small jar (H 483) is also decorated with concentric circles and dots incrustated red and black.

There are quite a number of cup-shaped vessels (for example, H 549) with expanding, discoid rims and bases and roughly cylindrical bodies. Small bowls (H 57) with short bill spouts and cups with hemispherical or oval bodies and solid disk bases show in some cases the attractive banded or dotted pattern of the translucent alabaster. Alabaster cups of inverted conoidal form (H 184) are common, but a cup from the little girl's grave is wrought of fine-grained, greenish gray and banded stone (H 391). A badly crushed small cup with terraced wall is unique.

We cannot help calling the two alabaster specimens H 174, H 175, cult objects for it is difficult to imagine their utilitarian purpose [Plate CXXXVI]. Both lay side by side in the first warrior's grave. One is a smooth concave cylinder (H 175) with a shallow diametrical groove across either base, ending in rectangular depressions which are cut out of



H. 536

RUSSIA III ALABASTER JAR. SCALE 3:4



H 173

H 174

A.—Hissar III CULT(?) OBJECTS OF ALABASTER. SCALE 1:1



H 166

B.—Hissar III STEMMED PLATE OF ALABASTER. SCALE 1:1



H 164



H 165



H 176

HOSAN III STEMMED PLATE, CUP, AND UNSTEMMED PLATE OF ALABASTER. SCALE 1:3; H 1665—1:6



H 477

Hissar III Alabaster Jars and Cup, Scale 1:3; H 479-2:3



H 481



H 549



H 57



H 483



H 391



H 387



H 778



H 386

HISAR, III VESSELS OF ALABASTER AND COMMON STONE (H 391). SCALE H 57—1:3;
H 778—1:2; H 483, H 387, H 386—2:3



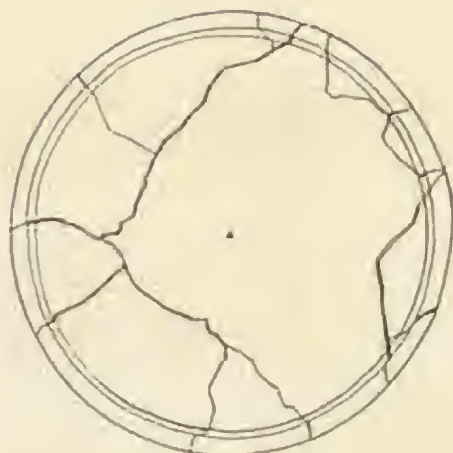
H 181



H 780



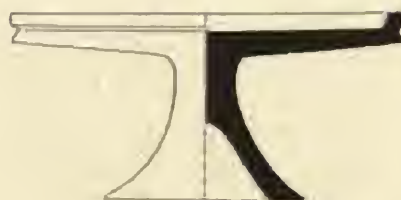
H 57



H 1005



H 182



H 176

HISAR III FORMS OF ALABASTER VESSELS. SCALE 1:6



HISSAR III FORMS OF ALABASTER VESSELS. SCALE 1:3

the margins. Two small holes are drilled in one such groove and suggest the attachment of some other device. The second object is a smooth disk (H 174) with a grip. Standing vertically, this 'shield' fits into the grooves of the before mentioned cylinder. We must admit that we have no plausible explanation for the use of these objects.



FIGURE C.—HISSAR III FRIT VESSELS. SCALE 1:2

Frit Vessels [Figure C]

All three frit vessels, found to date, belonged to the little girl, whose grave furnished an extraordinary amount of information. A small jar (H 385) with granulate surface, shaded iridescent light brown and grayish white, has an incised pattern of simple angles and branches. Two identical cups (H 382, 383) have patches of silvery iridescence on the exterior, while the interior shows green, glazy stains.

Miscellaneous Stone Objects of Stratum III [Plates CXLI and CXLII, A]

The range of stone objects stays about the same as in the preceding strata. There are numerous polishing stones, chalcedony flakes with plain or serrated edges, small globes of ordinary stone or of haematite, several celts, hand grinders and mullers (H 1113), ring weights (H 323), small perforated stones and the like. A series of chalcedony and bone (H 724, 726) arrow heads are interesting. They were bundled up in the second warrior's grave together with his copper dagger and spear heads. Traces of the wooden arrow shafts, at least .45 long were still faintly marked. While these arrow heads are stemmed and partly supplied with tangs, a slender obsidian point (H 606) has a plain, slightly incurved base. Lanceolate or ovate heads without stems occur, too. A conoid



H 327

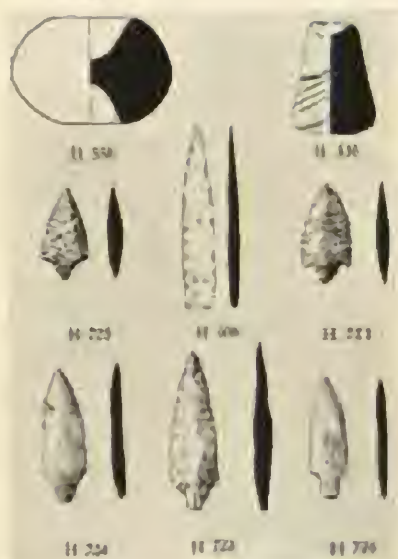


H 1113

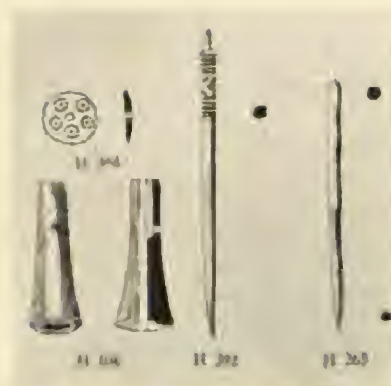


H 405

HISAR III STONE RING WEIGHT, MULLER, AND PESTLE.
SCALE 1:31 H 1113—1:6



A.—HISSAR III STONE OBJECTS.
SCALE 1:3



B.—HISSAR III BONE OBJECTS.
SCALE 1:3



C.—HISSAR III POTTERY AND STONE
WHORLS. SCALE 1:3



D.—HISSAR III POTTERY LIDS.
SCALE 1:3

object (H 136) with depressed apex may be a drill head. A biconoid stone (H 556) with depressions on both faces is problematical. A well wrought polished diorite (?) pestle (H 485), cylindrical with square pounding base, lay at the grave of the 'priest'.

*Whorls [Plate CXLIII, c] and Miscellaneous Clay [Plate CXLIII, d]
and Bone Objects [Plate CXLIII b] of Stratum III*

By far the most frequent whorl shape of Period III is a perforated disk with pronounced 'naves' (H 283), which we call 'cartwheel' type. Rarer forms are biconoid or biconvex discoid whorls, one being decorated with stipples.

Small objects of baked or unbaked clay are little varied or not at all, in the successive strata. In Stratum III the pot lids only deserve attention. They are circular, discoid or concave, with handles usually perforated for suspension. Lid H 781 leaned against an alabaster jar in the priest's grave.

The bone objects of Stratum III include some plain polished awls (H 265), a handle (H 106) for some tool, and some neatly wrought pins (H 392), which were found in the grave of the little girl. They are incised with parallel lines and angles, incrustated with black pigment in the same manner as the centered circles of a pin head (H 394) found close to the grave, and perhaps representing the type of head belonging to the pin stems recovered.

Ornaments of Hissar III [Plates CXLIV-CXLVI]

Quality and beauty of color and shape distinguish Hissar III ornaments from the immense quantities of little beads strung in rather barbaric fashion around bodies and extremities of the earlier people. It is true there had been a decided improvement in Period II but its ornaments still look rather modest compared with those of Hissar III, and quantity counted rather than quality, though we must admit that the little girl and the 'priest' of Hissar III were also quite lavishly supplied with ornaments.

Two important new materials appear in the personal adornment of the Period III people, the translucent chalcedony, beautifully banded in various color shades and the gold brown amber made extremely frail by



H. 4016

HOSEA III QUNAMENTS FROM THE LATHA GULF GRAVE (DP III, 8-11). SCALE 2:3



H. 4016, b



H. 402, H. 384



H. 490a



H. 492

HISAR III STRINGS OF BEADS. SCALE 1:5; H. 492—2:3.



H. 490c



H. 190

HISAD III STRINGS OF BEADS. SCALE 2:3

the influence of time. Metal ornaments of copper, silver and gold have been described above.

The little girl had the most striking ornaments [Plates CXLIV and CXLV, A]. At the forehead, perhaps actually worn there or in the hair, was a large, oval chalcedony pendant, light gray and milky blue, a conical alabaster bead, and a large lapis lazuli tube, its dark blue color interchanging with rings of gold leaf. The necklace consisted of large and small, oval and oblong chalcedony beads with dark brown, bluish white and red-brown shades; further, tubular, oblong, and diamond-shaped lapis lazuli units; tubular, oblong, biconoid and by-pyramidal carnelian beads of brown-red color, two being decorated with white incrustated (?), incised circles. There were, further, single pendants or beads of shell, turquoise, frit and copper, and a globular and a biconical bead of limestone. Not far from the skull was a rectangular frit collector with two perforations, and on the chest rested a string of small, white and light green frit rings, oblong and barrel-shaped alabaster beads, common stone disks and a second collector of alabaster.

The "priest's" necklace was composed of rings, disks, and oblong beads of gold-brown amber; oblong chalcedony beads banded brown and grayish white; grayish green, serpentine cones; dark blue, oblong lapis lazuli beads; natural perforated shells with brown shades; and a brown tube of common stone. His belt [Plates CXLV, B and C; CXLVI, A] consisted of great numbers and varieties of beads. Most important are segmented or plain frit tubes, and a little alabaster pendant, shaped like the conventionalized female effigies. Bi-cones of frit and alabaster, the latter decorated with black incrustated centered circles, and serpentine cones may have formed a separate string. Great numbers of frit and amber units were perhaps combined on a piece of beaded fabric pulled through two copper bracelets, which were virtually filled with solid lumps of beads.

These two groups of personal adornment suffice as samples. They include the principal types of ornaments of all Hissar III people, in addition to some units not occurring in the graves of the commoners.

The Necropolis of Hissar III (Plate CXLVII)

It is extremely interesting to study the distribution of burials uncovered in eight squares on top of the main mound. There are a hundred



PLAN OF HISSAR III. *Nymphaea* ON MATS. MARCH 1906

and eighty skeletons or skulls (four prominent graves being marked by circles on the map²). The environs of the graves of three outstanding persons, the 'priest' (DF 08, x-1), the second warrior (DF 09, x-1), and the little girl (DF 18, x-1), are rather deserted, while the grave of the first warrior (DF 19, x-2) is partly enclosed by a crescent of crowded burials, kept, however, in respectful distance.

This arrangement suggests definitely that this warrior was a person of high rank or at least highly esteemed by his contemporaries whose loyalty, or desire for some advantage in the other world, induced survivors to bury their dead close to him. This custom is not unique: certain *Kurgans*, the burial places of many tribal chiefs in general, the *Imam Sadeh*, that is, graves of the descendants of the Prophet, and the like, present a similar or identical plan of crowded burials around a single grave.

In connection with the warrior's grave, we must further mention that the rather regular distance kept by the surrounding burials suggests that the central grave had been marked in some manner, either by an enclosure or by a low tumulus, though we found no traces thereof.

There is another highly important point on the plan of the Hissar III cemetery. In the northeast corner of Plot DG 00 [Plate CLII], the remains of ten persons were found within a small area. Most bones of the skeletons were disturbed and mixed up, but quite a few sections of vertebral columns, arms or legs, pelvic bones and femora, were still articulated. There is hardly a doubt that these persons had been disposed of in a communal pit, not immediately, but prior to total decomposition. In Plot DG 96 the remains of twelve persons were found under the same conditions. Archaeological criteria attribute these mass burials and most graves of the necropolis to the last phase of Period III, that is, to the uppermost occupational level (1a), which has for the larger part disappeared. While recording the burials, we noticed frequently that during the interment of these persons walls of the lower level (1) had been disturbed, a fact which also becomes obvious when the survey of the necropolis is superimposed on the plan of the architectural remains of Level 1. We noticed, further, that by far the greater number of those burials grouped inside enclosures of Level 1 lay above the floors. We may mention at this point that the sequence of deposits in all sections of

² The skeletons are numbered within their findplot, e.g., DF 18, and designated by xⁿ.



WORK IN THE HISSAR III NECROPOLIS ON THE MAIN MOUND

the mound was thoroughly disturbed by numerous burials of the upper occupations dug into the underlying levels.

We shall first consider the Hissar III burials in general and refer below to the graves of prominent persons. The schematic drawings show [Plate CXLIX] that there is no rule as to position except the usual contracting of the legs. Bodies and heads lie laterally on either side, dorsally or ventrally. The arms and hands are in voluntary positions, and the mortuary gifts are deposited at will, without preferring particular parts of the body. In none of the prehistoric burial groups did we notice a definite rule concerning the orientation of the bodies, while present Mohammedans bury their dead extended in a northwest-southeast direction, the head being northwest and looking southwest towards Mecca.

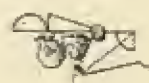
The Hissar III people were buried, as their predecessors, below the floors of their houses or at least below the level of the occupied area, but the above mentioned cemetery placed around a single grave shows a custom not noticed so far, with the earlier people. Plain earth burials are the rule. Mud brick cists seldom occur. Traces of matting or fabric are preserved in some cases on and below the skeleton as in the earlier graves, too.

The mortuary equipment consists of all varieties of pottery vessels except large storage pots and braziers. Personal ornaments, particularly strings of beads, are usually more elaborate, but rarer, than during the preceding periods, though we cannot yet distinguish between the copper bracelets decorating the dead of Periods II or III. Within the scope of this report, we can only sketch the four best equipped and most important burials of Stratum III. In the complete, final report to follow, they will be dealt with in detail in the same manner as all other finds. Many of the important objects obtained in these four graves were above described in the chapters on the individual categories of Hissar III finds, and therefore they are merely listed below.

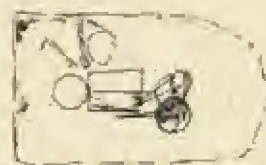
The first warrior [(DF 19, x-2), Plates CLII and CLIII], apparently the most important person whose remains we found, had a smaller mortuary equipment than the others to be considered, but some of his objects are not matched by any other finds. A fine silver pitcher, gray pottery vessels, and an alabaster jar with discoid rim and base were beyond his head. A copper wand (H 170) with birds or with animal heads was thrust into a small pottery jar. In front of his head and body lay a splen-



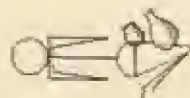
DG10, a-3



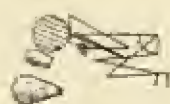
DG00, a-19



DF18, a-10



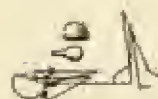
DF18, a-15



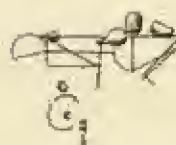
DF18, a-46



DF09, a-2



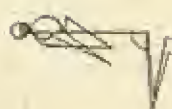
DF05, a-8



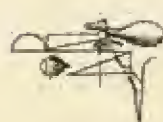
DF19, a-21



DF19, a-3



DF05, a-7



DF18, a-13



DG00, a-4



DF18, a-38



DF19, a-12

Hissar III BURIAL SCHEMATA

did bident, a dagger, or large knife, a mattock, efficient for war and peace, and a hollow chisel. A helmet (?) of copper, with lead fragments inside and outside, lay inverted at the feet, while a beautiful, shield-shaped, alabaster disk and a 'pedestal' of alabaster were in front of the knees. Chalcedony, lapis lazuli beads and others [H 180, Plate CXLVI] were spread about at the right arm and chest, together with two gold-sheathed, copper earrings.

The second warrior [(DF 09, x-1), Plate CLII and CLIII] was far more martially equipped. A whole group of bundled-up weapons extended parallel to the right side of the ventrally disposed body. There was a 'killed' copper bident, a dagger, and a lance head of copper and a great number of chalcedony arrow points, formerly attached to shafts of wood still traceable for a length of .45. Beside and above the weapons lay copper bowls, an alabaster bowl, a small hollow chisel, the decayed remains of whose handle were traced in continuation of the tool, that is, the handle was oriented in the same manner as the chisel. Six series of little alabaster and clay animal effigies, described in the chapter on Hissar III figurines, were spread beside and among the weapons, and a small double-headed ram of copper lay on top of the skeleton of a small quadruped, perhaps a sheep, doubtless buried with the warrior. A second group of gifts extended from head to foot of the skeleton. There were cups, and a jar of alabaster, a pottery lid leaning against the jar. Gold-sheathed copper rings once ornamented the ears. A large copper bowl was crushed by the weight of the body lying on top. It contained strings of beads, an alabaster cup, a copper seal and a wand of copper ending in a double-headed animal. A splendid copper mace head lay above. Another copper vessel and a 'killed' copper ladle, copper spear heads, and an alabaster cup were on and beside pelvis and feet.

The so-called 'priest' [(DF 08, x-1), Plate CLII and CLIV] was virtually covered by his mortuary equipment, and in addition some device, or several objects of perishable material, seems to have covered the grave, judging by four large copper nails, oriented about alike, and separated from the skeleton and the equipment by a thin layer of dirt.

Bowls and a trident-ladle of copper, alabaster jars, cups, a plate, and a lead cup, in addition to a typical Hissar III canteen of gray ware cover the likewise ventrally disposed skeleton from the pelvis to the chest, and lie behind the neck and the head. Beads and pendants once com-



Hissar III—A STUDY IN HANDS.

bined to form a necklace; a belt, loose strings, and perhaps beaded fabric were described in the chapter on ornaments. They are scattered over the neck, back and pelvis, and virtually form humps within the bracelets and beside the various objects deposited at the right arm and hand. The latter group includes, further, a plain alabaster cup, a black and red, incrustated alabaster jar, copper objects such as seals, a wand, a crushed cup, and a little bottle, perhaps the pedestal for the adjacent wand. Small, single or double-headed rams of serpentine also belong to this group.

The last objects to be considered include a diorite pestle, situated somewhat above and apart, but probably belonging to the burial; further, the interesting copper disk once ornamented with some floral matter, and leaning against the right posterior part of the skull; and, finally, a large female effigy of alabaster partly covered by the right pelvic bone.

There remains the grave of the little girl [(DF 18: x-1), Plates CLII and CLV], frequently referred to in the chapters on Hissar III finds. The child, not more than five to seven years old, had an extraordinary number of gifts. It is understood without saying that her equipment is not in proportion to any personal qualities or achievements. Neither is it proportionate to the child's age. There can hardly be a doubt that the mortuary equipment is that of an adult woman, as the reader may judge for himself. Thus the quantity and the quality of the gifts permit three important conclusions. First of all, since personal accomplishments are out of the question, the child's equipment reflects the wealth and therefore presumably the elevated status of her family. Further, since the mortuary gifts are characteristic of a woman, the child must have been a girl, a fact not determinable by means of the undeveloped bones. Going a step further, the lavish equipment of the little girl suggests that the position of a girl child and consequently that of a woman was considerably more enjoyable and important in prehistoric Iran than during more recent times. Finally, the mortuary equipment of a grown-up woman in a little girl's grave proves almost beyond a doubt that the Hissar III people believed the child would grow up in the life thereafter; and use the pottery jars and copper bowls, which were much too large and heavy for the little fingers. There seems to be just one flaw in this conclusion: the large vessels may have been meant for servants to attend to the child in the Other World, but were these servitors to be adorned



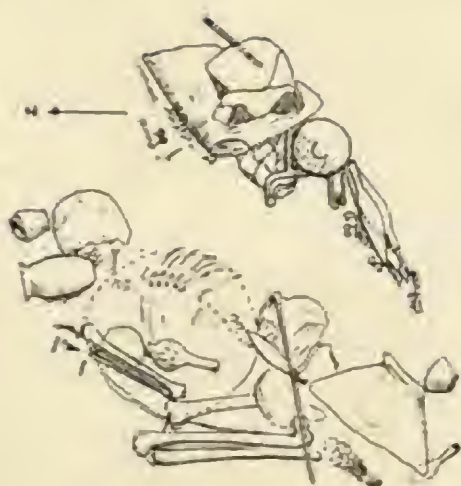
A.—Hissah III—A COMMUNAL BURIAL (PLOT DG 00)



B.—Hissah III—BURIALS IN PLOT DF 29



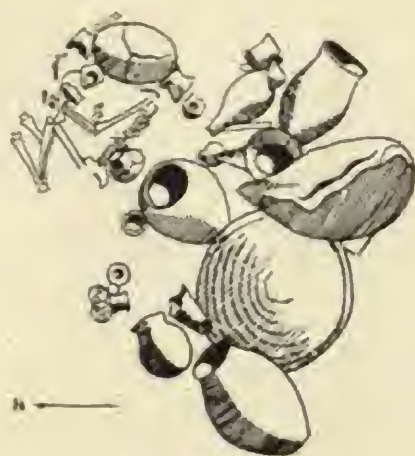
DF19, x-2



DF09, x-1



DF08, x-1



DF1E, x-1

Hissar III—PLANS OF THE FOUR MOST IMPORTANT BURIALS



A.—HISSAR III—THE FIRST WARRIOR'S GRAVE (DF 19, x-21)



B.—HISSAR III—THE SECOND WARRIOR'S GRAVE (DF 09, x-1)



A.—Hissar III—THE 'PRIEST'S' GRAVE (DF 08, X-1)



B.—CLOSE-UP OF ORNAMENTS AND FEMALE EFFIGY IN THE PRIEST'S GRAVE



A.—Hissar III—THE GRAVE OF THE LITTLE GIRL (DF 38, 8-11)



B.—CLOSE-UP OF THE LITTLE GIRL'S GRAVE

with the strings of large chalcedony and lapis beads weighing so heavily on the little girl's neck and shoulders?

Six small cups and pitchers of silver were grouped around the little girl's head and chest. A large, beautiful chalcedony pendant and an interchanging gold and lapis lazuli bead, in addition to a conical alabaster 'button' had partly dropped into the silver cup in front of the forehead. At the cup was also a stippled silver pendant in form of the stereotyped female effigy of Hissar III. Beads of chalcedony, lapis lazuli, carnelian and limestone, including a large shell pendant, encircled the neck. A gold-covered, copper earring was at the left clavicle, and frit and alabaster beads lay massed on the chest. In front of the latter a copper wand with a ram as head, a little cow, a sheep of silver and two silver pins had been deposited. Spread about behind the back of the little girl were four cups and jars of alabaster, a cup or bowl of attractive green stone, two almost identical 'cosmetic jars' of alabaster with incised and black incrustated centered rings, two cups and a little jar of incised frit. Then followed larger vessels, pottery jars and bowls, a lead cup and two big copper bowls, one inverted and covering a flat copper spoon or stirrer. Black incrustated bone pins and a copper point conclude the little girl's equipment for the Other World.

In concluding this section, we want to mention that we noticed definitely Mongoloid features in several skulls, while the bulk of the Hissar III population apparently belonged to the Caucasian race. Again, detailed anthropological studies of the voluminous skeletal material preserved and dispatched to the United States will give us accurate information about the racial characteristics of those people.

The End of Period III

The end of the period of greatest achievements coincides at Tepe Hissar with the desertion of the site, about three and a half millennia before our days. About two millennia after the last settlers of Hissar III had left or had died, the Sasanians built a palace on the peripheral remains of the ancient town, but the main elevations were never again occupied.

We cannot help interpreting at least one cause of the end by means of the crowded cemetery on top of the main hill and by the communal

burials there and elsewhere. We found no traces of war or conquest by foreign people. There were no burned buildings like those of Level 2 which actually seem to have been destroyed in that manner. The fire-reddened East Hill we attribute to this earlier, burned layer of Stratum III. The top remains on the main hill and elsewhere showed the drab, normal mud brick shades. Further, if many people should have been killed in battle, we would have found a few, at least, with bones—particularly skulls—injured by blows. We found no marks of this kind. As a result of continued drought and famine we would expect an unusually large percentage of burials of children and old persons, while the strong and healthy would have emigrated. There were many child burials of the last Tepe Hissar occupation, but their percentage appears normal for early times and the proportion of skeletons of old persons is, as usual, rather low. Thus we have for the present only one theory for the apparently abrupt end of Hissar III. We assume that a severe epidemic struck the last community, wiping out a large number of people, and finally driving away those that were left, after they had buried their own dead and the remains of others. We are certain that settlements of mediaeval Europe showed similar scenes during the times of the Black Death.

Whether or not this theory is correct, at any rate human occupation stopped at Tepe Hissar when it had reached a climax of accomplishments. Archaeology will have to search farther afield to fill the immense gap of two millennia and to determine the culture history of the region from the last Hissar III settlers to the Sasanians, and on, until the thread is tied with present Damghan, which first appeared in history during early Islamic times.



WORK IN THE SASANIAN PALACE—A COLUMN AND ROAR PLACES AT THE THESCH BORDJ

THE SASANIAN PALACE

[Plates CLVI-CLXIX]

We are convinced that the Damghan plain was settled rather continuously by towns or villages of varying importance; but at Tepe Hissar, instead of human beings, jackals and porcupines, foxes and chipmunks enjoyed an undisturbed existence for many centuries. The houses of the last Tepe Hissar people had long since crumbled down. Pilferers had probably carried off the wooden parts, valuable in this unforested territory. The weakened structures broke down and were leveled by the eternal northwest wind, and by the rain and snow of the winters.

About two thousand years had gone before people of an historic epoch, the Sasanian, occupied again a marginal spot of the mound area. According to Prof. E. Herzfeld, the building to be described belongs to the earliest phase of this period, that is, to the second half of the third century A.D. It is a solitary palatial construction, while a small contemporaneous settlement extended perhaps from the palace site towards the northwest.

A detailed description of the Sasanian Palace of Tepe Hissar will follow in the final report on our work. An extract will therefore suffice at the present time.

The palace complex oriented diagonally, northwest and southeast, consists of rectangular and square rooms and halls marked mainly by sharply outlined plastered floors and in some cases by sturdy wall remains of large-sized unbaked bricks.

An outside wall, partly indicated by wall fragments, presumably enclosed the entire building as well as its postulated park, and a pavilion situated in the northeast corner of the plan.

The focal section of the construction consists of a colonnade of three pairs of full columns and one pair of attached half columns leading to a square, and presumably domed, room opening into a smaller, rectangular enclosure with an exit through the northwest facade.

While we found remains of polychrome murals in purplish red, blue, carmine, white and ochre, the principal ornamentation of the building consisted of well modeled plaques and architectural details of gypsum.

All plaques and certainly many other stucco ornaments were formed by moulds, as proved by the identity of the units.

The plaques show a boar head in a beaded circle, a female bust in a square panel and a symbol composed partly of characters not occurring prior to the Sasanian period, as stated by Prof. Herzfeld. The symbols are again enclosed by a beaded circle, while the frame ornaments of all plaques vary. There are, finally, smaller plaques showing browsing or drinking stags and does. Small fragments of a fifth series suggest a bird pattern, but the principal element is not preserved.

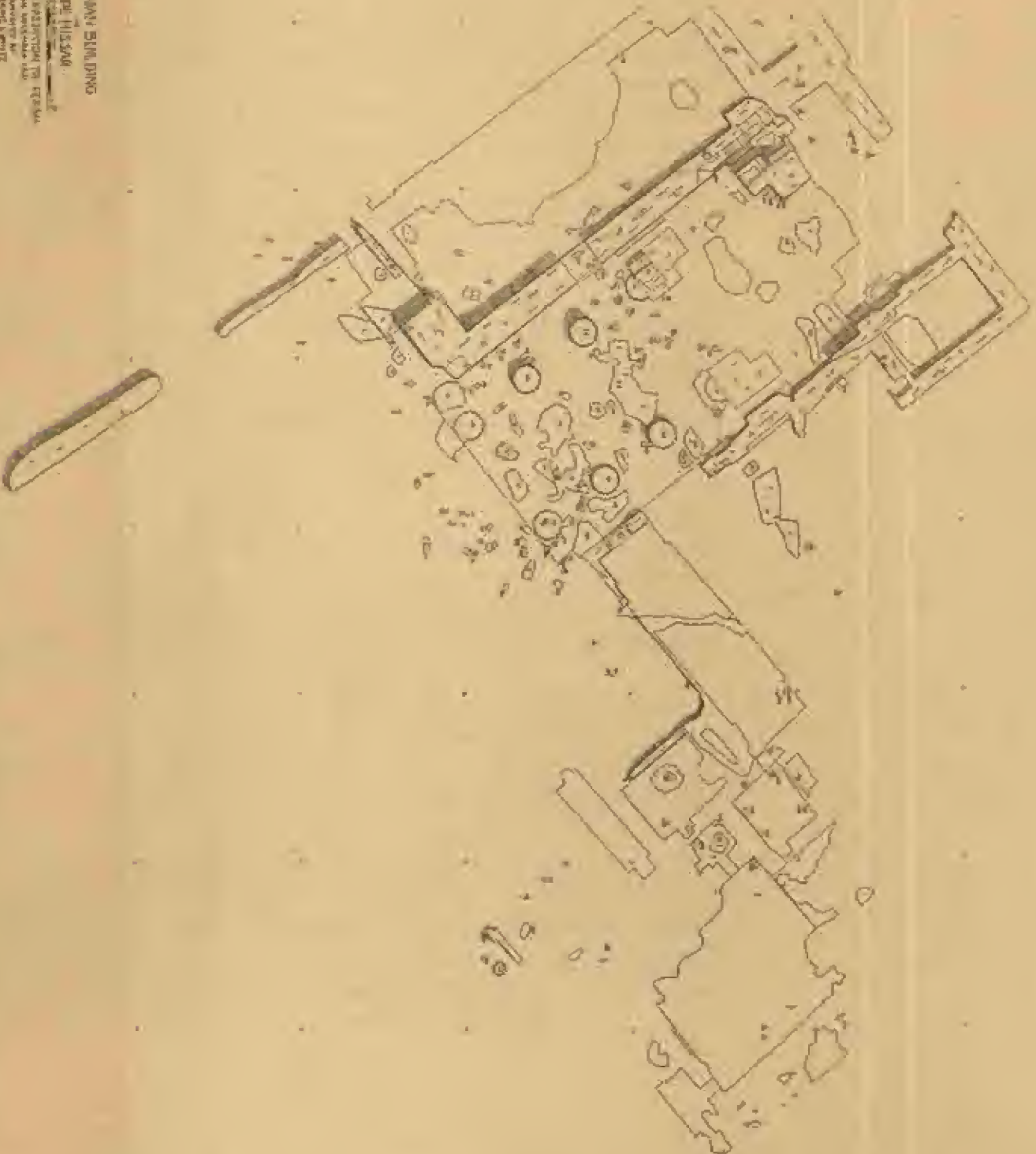
These plaques, as well as the other stuccos to be described, deserve a more enthusiastic presentation than plain enumeration; but the reader may form his own judgment by means of the illustrations.

Near the southeast entrance to the 'domed room' we found the left side of a lion's face, a large paw, and fragments of fur, modeled in gypsum. In the hypothetical restoration by our architecturally trained artist, I. Gerasimoff, those fragments turned into impressive guardians of the entrance, and stucco heads of ibex or moufflon found their places at other prominent points.

The restoration gives an idea of the beauty of the original structure, though it does not claim to be correct beyond a measure of probability. Certainty is only given by finding an object or element in its original position. Still it represents months of work. It is based on the survey of Mr. White, who had to plot every stucco fragment uncovered, and it was theoretically built up by Mr. Gerasimoff, who defined the former location of the ornaments and the elevations.

The columns were impressively ornamented with carved stucco coating. The first pair shows a swastica pattern, the second is ornamented with filled lozenges, the third with palmettes in oval units, while no remains of the ornamentation of the fourth pair of half columns are left. The column capitals were ornamented with scaled designs.

In the restoration, arches with an attractive star pattern below and well modeled archivolts at the sides span the columns. Terraced cornices are below the roof, friezes with various floral patterns decorate the walls, and slender, ornamented arches curve above the doors, while the plaques were raised again to their assumed original position above the arches and at the side walls, close to the points where they had fallen.



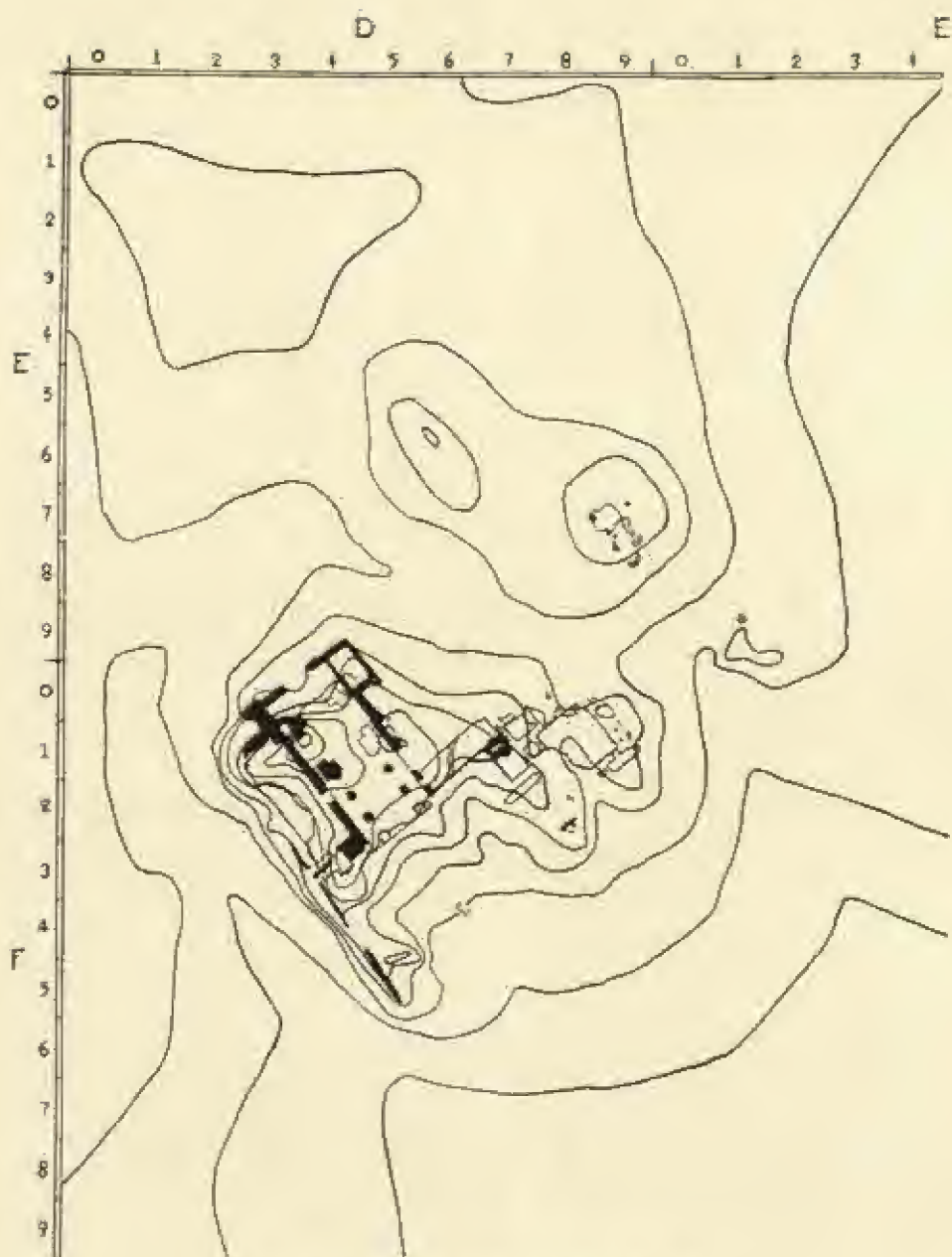
SASSANID BUILDING

100' 115' 50'

THE ADJUTANT GENERAL'S OFFICE

ADJUTANT GENERAL'S OFFICE

ADJUTANT GENERAL'S OFFICE



SASANIAN BILLOCK WITH PALACE CONTOURS

Minor Finds from the Palace

In the palace territory we excavated a broader but shallower area than in the case of the prehistoric deposits; nevertheless, small finds of the Sasanian period were rare.

We found no pottery vessels, but the sherds indicate that the ware of this period in this part of the empire was plain red. A small figurine fragment was made of the same ware.

As to metal objects, iron, of course, had been introduced long before the Sasanian period. We found corroded points and a long, paddle-shaped device. We also assume that copper, by this time, was alloyed with tin, and we use the term bronze, though no chemical analysis was made, so far. Two bronze arrowheads are interesting. Perhaps they represent guide specimens. Both have three winged blades, socketed or stemmed. A problematical object (H 428) reminds one of an elephant's head. We are not at all certain about the age of the bronze mace head illustrated. It actually occurred in the top dirt of Stratum I in the Painted Pottery Flat. It had originally two projections in form of birds' heads. The bronze coins puzzled us considerably. There are two specimens of late Parthian times, while the rest are Islamic. No Sasanian coins appeared. As a rule, the bronze objects from the Sasanian deposit are covered with a green patina only, while the copper objects of the prehistoric strata usually show thick coats of oxide.

None of the attractive and characteristic Sasanian seals occurred. We found half a signet ring of carnelian showing the lower part of an incised human figure. A bronze ring with two tangent centered circles may also be mentioned.

Many individual beads occur in the refuse layer on top of the building. Glass, coral, and ivory appear as new materials, in addition to those known to us from the pre-historic strata. There are the widespread eye beads of glass, for example, red eyes with light gray borders on purple ground with silvery iridescence. Dragged patterns occur, too, with white, pink, and black or white, yellow and black color schemes.

As to perishable material, perforated straps of leather and small decayed fragments of carved wood were found.

The Duration of the Sasanian Occupation

We do not believe that the palace was inhabited during the entire Sasanian period. The building material was not strong enough to last more than a few generations. Perhaps it was occupied not longer than one generation and then deserted in peace.



TWO COLUMN REMAINS OF THE SASSANIAN PALACE



A.—GATEWAY TO SOUTHWEST HALL OF THE SASANIAN PALACE



B.—SASANIAN PALACE COLUMN FRAGMENT, SHOWING TYPE OF CONSTRUCTION



H 1596

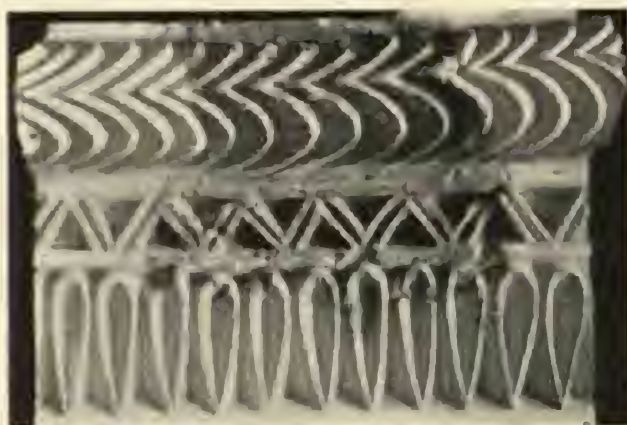


H 1584



H 1591

FRAGMENTS OF FRIEZES FROM THE SASANIAN PALACE. SCALE H-1596, H-1584 ABOUT 1:9;
H-1591 ABOUT 1:7



H 1597

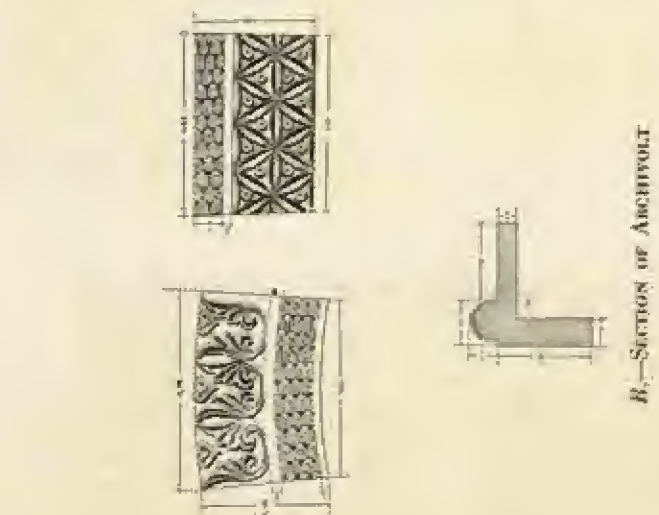


H 1598



H 1595

SASANIAN PALACE—SECTION OF CORNICE ARCHIVOLT AND BASE
ORNAMENT OF COLUMN. SCALE ABOUT 1:8; H 1595—1:6



ARCHITECTURAL UNITS FROM THE SASANIAN PALACE



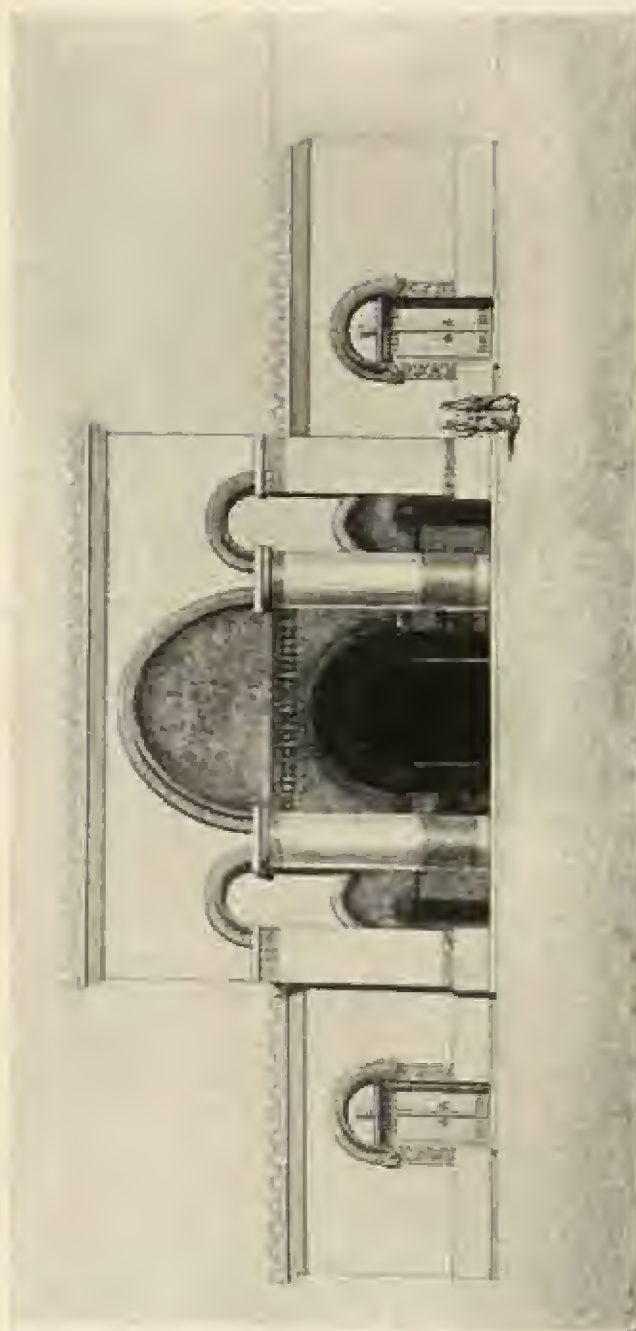
SASANIAN PALACE—STUCCO FRAGMENTS OF LION HEAD, PAW, AND PAW, AND HYPOTHETICAL RESTORATION OF LION HEAD



SASANIAN PALACE—RESTORED PLACQUES. SCALE ABOUT 1:4

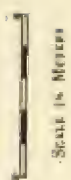
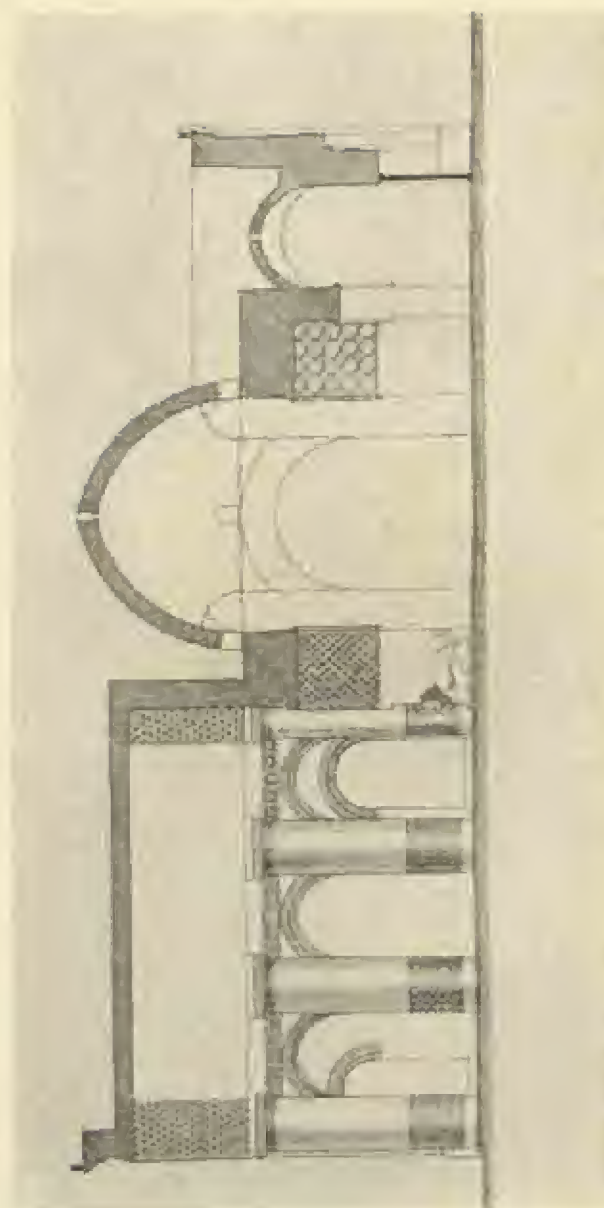


SASANIAN PALACE—RESTORED STAG AND DOE PLAQUES, SCALE ABOUT 1:4

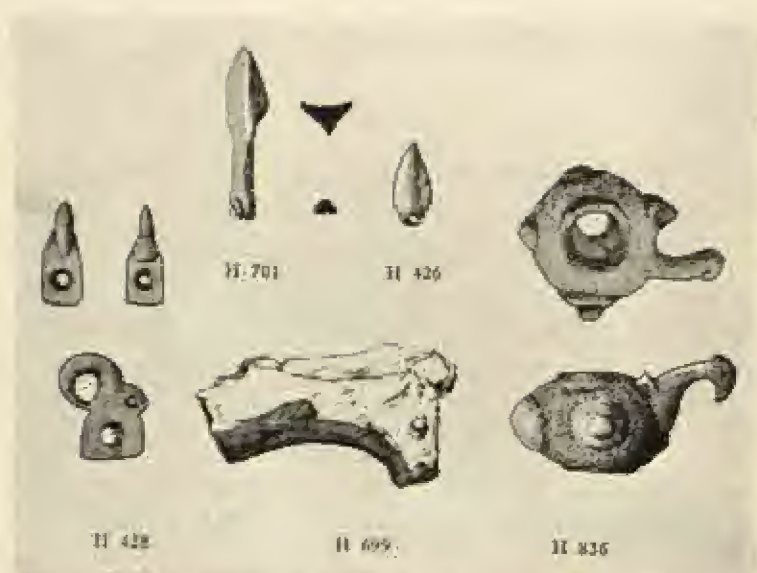


THE SASSANID PALACE OF TAPPEH HISSAR—SOUTHERN FACADE
After the Reconstructions of E. G. G. G.

Scale 10 Meters



THE SASSANID PALACE OF TAPPEH HISSAR
 CROSS SECTION THROUGH CENTER OF COLONNADE AND MAIN HALL.
 AFTER THE DISCOVERIES BY L. GARDNER



A.—SASANIAN PALACE—BRONZE OBJECTS, POTTERY EFFIGY SPOUT (H 836 FROM TOP LAYER OF DIFFERENT LOCALITY). SCALE 1:2



B.—REVERSE OF TWO PARTHIAN COINS FROM SASANIAN PALACE. SCALE 2:1

SUMMARY AND RESULTS

Time had erased the memory of the dead towns of Tepe Hissar. About three and a half millennia after the mound had closed over the last Hissar III settlement, the hill crust broke under the tools of our laborers. In the excavation squares the ruined houses and the graves of their former occupants emerged again, illuminating by their contents the material achievements and the development in ancient northeast Iran within an era of, roughly speaking, fifteen hundred years or more. The contemporaneous culture epochs in Mesopotamia extended from the Early Sumerians to early Kassite times, while in Anatolia the periods from the Red Pottery Age to the crystallization of the Hittite empire correspond to the occupation of Tepe Hissar insofar as determined. The work of the 1932 season expanded the era of Tepe Hissar occupation into remoter antiquity, as suggested in the chapter on Hissar I pottery.

Scientifically, the principal result of the first season was establishing a chronological framework consisting of a number of objects and traits which are characteristic of the successive culture strata of Tepe Hissar. We are briefly summarizing these features.

Stratum I, sounded in platforms which crop out from below the later deposits, is mainly characterized by wheel-made, painted pottery, decorated with simple geometrical patterns or with conventionalized animal designs representing ibexes, gazelles, felines, and the like. A vessel and sherds of a more primitive character than the bulk of the Hissar I ceramics appeared at the deepest level of the excavation, which had not yet struck virgin soil at any point of the mound during the first season.⁹

Copper pins and daggers of certain forms, in addition to points, indicate that Period I already belongs to the Age of Metal. Many stone objects were still in use, but their proportion does not perceptibly surpass that of the corresponding stone implements of the later strata.

Great numbers of seals or seal-shaped ornaments with simple geometrical patterns or, in one instance, with an elaborate pattern of persons and animals, are characteristic for Stratum I. Frit occurs already during this early period.

⁹ Compare above and page 353.

Animal figurines of baked and unbaked clay are frequent in all strata. In the deposit under consideration, some exceptionally large and painted specimens occur.

The spindle whorls of Period I have the shape of perforated miniature cups. Laterally perforated pottery disks seem also to be typical for this time.

Incredible numbers of small gypsum and frit beads were strung around necks, arms and hips of the Hissar I people, the very quantity of these ornaments being a characteristic feature of this period.

The dead of all Hissar periods were disposed of with contracted legs. In addition, the burial custom of Hissar I insisted on having the faces of the dead look towards the right side, though no definite orientation of the bodies was noticed.

The end of Period I we ascribe to the arrival of the foreign Hissar II invaders, whose former dwelling places we traced towards the northern steppes.

The gray pottery of the foreigners displaces the painted ware of the indigenes, but mutual absorption of ceramic traits is indicated by the fact that Period I forms persist though the decoration disappears. Decorated vessels of the last Hissar I people were found side by side with the gray pots of the foreigners in the same graves. Footed jars, bowls and goblets, gray and wheel-made, are the typical vessels of Hissar II.

In metal work Hissar II excels over Hissar I. We illustrated the guide specimens, such as a well-wrought copper mace head, double scrolls and loops, thick-stemmed nails with broad concave heads, and bracelets and anklets of coiled copper wire, a type occurring in Stratum III, as well. Silver and lead objects appear first in Stratum II. Large copper stamp seals with the omnipresent filled cross as sealing pattern, are also not known prior to Hissar II. Mountain crystal, lapis lazuli, and carnelian are new materials for personal adornment almost as abundant as that of the past period.

The Hissar II people had no characteristic burial customs. The contracted skeletons lay, as usually, below the floor of the occupational level, in plain earth, seldom in mud brick cists.

Period III, we believe, grew out of Period II, and was, in addition, influenced by foreign, particularly by western, culture traits. We tentatively attribute this last prehistoric epoch of Tepe Hissar, to the first half

of the second millennium B.C. It may be somewhat earlier but hardly later due to the absence of iron objects, a fact which was considered above in the introductory chapter of Hissar III.

Elaborations of many culture features of the preceding periods in addition to new traits characterize Period III. Copper weapons, tools and vessels, such as the long bidents, the spear or lance heads, the hollow chisel, the mattocks and the large bowls surpass by far the products of Period II workmanship. Silver vessels, too, were only noticed in Stratum III. Exquisitely modeled vessels of alabaster and other stone appear first in this stratum. The copper seals show elaborate patterns, while seal cylinders indicate connections with the west.

Certain series of animal figurines are little works of art, in several instances faithfully picturing the originals. The representations of human beings, such as female effigies, were found, so far, only in Stratum III. Wands of copper are equally characteristic of this time. Well shaped ornaments of attractive materials displace the quantities of rather simple beads of the preceding periods. While simple frit occurred previously in form of beads, vessels of this material are an achievement of Hissar III. Nevertheless, the same or slightly modified series of common clay, stone, or copper objects occur, and the pottery vessels seem actually to be more primitive as to technique than the vessels of the preceding strata. Bottle pitchers, canteens, vase cups, and braziers are guide forms of this time.

Again, the lavish mortuary equipment of certain graves strikingly contrasts with the simple mortuary furniture of most burials, and suggests the existence of dominant social castes, not suggested to such an extent by the remains of the former occupants of the site. Architectural remains uncovered in 1932 reflected social distinctions in a similar manner. It is interesting to note the occurrence of Mongoloid crania in Stratum III.

The abrupt end of Period III, and of the prehistoric occupation of Tepe Hissar in general, was due, we assume, to an epidemic, destroying part of the population and forcing the rest to search for new homes.

We have to add here a few words concerning the theories of Sumerian origin and their postulated migration. It is assumed that the Sumerians settled in the Two River Country during the fourth millennium. Judging from archaeological criteria, they found there a sedentary population which they gradually absorbed and displaced. The indigenes used painted pottery with forms quite distinct from the undecorated Sumerian vessels.

The early phase of the Painted Pottery Age of Tepe Hissar, characterized by rather primitive decorated ware, corresponds approximately to the time of the appearance of the Sumerians in Mesopotamia. It is clear, therefore, that the advanced Sumerians had no culture relations whatsoever with the illiterate population of the Tepe Hissar district nor, to go a step farther, with the regions north of the mountains, in the Turkoman Steppe, where conditions seem to be similar to those of the Tepe Hissar region. Neither do we believe that the Sumerians ever touched these districts on their postulated migration. Not until the last prehistoric culture period, Hissar III, do we notice definite relations with the West, but there seems to be no doubt that then the western culture zone was the focus of diffusion.

None of the first great empires of ancient Iran left their traces on Tepe Hissar. Other sites of the region may have been inhabited during the times of the Medes, the Achaemenians and the Parthians. One of the capitals of the latter period, Hecatompylos, is supposedly situated in the Damghan plain, though certain authors place it farther east.

Finally, in the beginning of the Sasanian period, roughly two thousand years after the end of Hissar III, a small palace of a Sasanian noble rose on the marginal debris of the ancient Tepe Hissar towns. The main section of the building was impressively decorated with gypsum plaques showing human busts, animals, and abstract patterns, situated mainly in the entrance hall where columns with attractive stucco work carried ornamented arches and archivolts. Lions of gypsum guarded the entrance to the main room, and many friezes, door arches and other architectural units with attractive floral or geometrical designs lay in the debris of the palace, which in addition had been ornamented with polychrome murals.

The Sasanian palace lasted a few generations at the most. When the Islamic wave struck the Damghan region, the impressive building had presumably crumbled, the debris protecting the remnants of its former splendor.

The Balance of Season 1931

Balancing critically the aims of the expedition as stated in the initial chapter of this report with the results summarized above, we consider the first season's task at Tepe Hissar accomplished, whereas we debit our-

selves with the second phase of the expedition's activities, namely, exploratory work and, mainly, the identification of Hecatompylos. We shall later report to what extent the second season squared the accounts in these respects. There was a faint chance that the tests of the Damghan Citadel and of Tepe Muman would produce pre-Islamic remains. They did not.

Our failure in expanding the activities of the expedition farther afield was due to the obviously essential concentration on the focal point, namely, Tepe Hissar, to the lack of an accurate map of the region, and to the general ignorance as to the ceramics of the periods between the gray ware of Hissar III and the glazed wares of the Islamic epoch.

It is clear that much remained at Tepe Hissar requiring our principal attention during the work to come. But, in addition, the two principal clues for the systematic archaeological exploration of the environment are now in our hands: the archaeological map of the Damghan Region, which was finished in late fall; and our knowledge of the ceramics. In the Damghan district, there was no glazed pottery of any account prior to the Islamic era. Red wheel-made pottery is characteristic of the Sasanian epoch and similar ware presumably also for Parthian deposits.



A.—A STOP EN ROUTE DAMGHAN-TEHERAN, BEFORE ASCENDING FIBUKUH



B.—MINISTRY OF EDUCATION, TEHERAN.

APPENDIX

Season's End, Interlude in Teheran

Icy winds and occasional flurries of rain were already sweeping across the Damghan plain when, on November 6, the first excavation season closed. Winter was near. Sheepskins were worn on the mound and in camp, where makeshift stoves had been installed.

The mound still required attention for weeks. The remaining burials and architectural remains had to be recorded. The rest of the dump soil was removed. The plastered floors of the Sasanian palace were again covered with dirt, while the tracks and the wagons were finally carried to town.

Before the mound was deserted, we had a group of delightful visitors from Philadelphia. They were Mrs. Clarence Warden, her two daughters and Miss Catherwood. The monastic atmosphere of Damghan camp was thoroughly changed during their presence that brought a breath of fresh air and an enjoyable variation into camp monotony, in the same manner as previous visits by the esteemed friend of the expedition, The United States Plenipotentiary, Mr. Charles Hart, and our colleague, Dr. Frederick Wulsin with Mrs. Wulsin.

In camp the report on the Sasanian palace was prepared. The numerous stuccos were cleaned, sorted, partly restored, and catalogued. The scientific descriptions of vessels and other finds were started. The field records on burials, architecture, and the like, were typed. The surveys of the town and of the environment had to be completed and drawn. Diagrams, paintings, theoretical reconstructions, and great numbers of photographs of the finds had to be made.

However, climatic conditions drove us away from wintry Damghan long before we considered our above-outlined tasks fulfilled. Snow and ice had steadily crept down from the mountain ranges to the valleys and passes, until, finally, the snowstorms of December covered at times the entire plain with a white coat. The accommodations were inadequate and the working conditions became difficult. We had a rather clear idea what winter would bring to Damghan. Thus a house had been rented in

Teheran which was to be the expedition quarters for the cold season. We may remark here, parenthetically, that according to the original plans the expedition was to stay in the field for two consecutive seasons in order to save the disproportionally high traveling expenses. It is understood without saying that such an arrangement pleases every field worker.

At any rate, when Damghan became inhospitable and the snow threatened to block the passes to Teheran, all the attention of the staff was concentrated on packing the numerous and valuable finds of the season. Much of the cotton harvest of Damghan had to protect the stuccos, the vessels, the skulls, and other objects that had to stand the transport to Teheran on rocking trucks.

The government had temporarily seized many large trucks. Thus it was difficult to find the transport facilities for our material. At last, just before Christmas, we succeeded in getting hold of four three-ton lorries needed for our purposes. It would have been senseless to risk our good Ford truck on the many trips that would have been required to carry finds and equipment across the mountains. Nevertheless, it was as usual stuffed to capacity when at last camp was broken, on December 20, and the engines of our caravan bid farewell to Damghan, and its friendly officials who had assembled to see us off. Needless to say, brakes and chains were well tested. The white mountains in the northwest inspired caution.

First came our truck. The four Graham lorries followed and the invaluable little Ford Touring, transferred to us by Dr. Wulsin, was rear guard and "M.P."

The first leg of the voyage across a spur of the mountains to Semnan, went smoothly. We stayed in the garage, hoping only that the passes would be open for the difficult part of the trip. We may insert that a few days after our arrival in Teheran the passes were blocked by masses of snow and stayed shut for weeks.

Before daybreak on December 21, we left Semnan, where the ascent to the mountains begins. The sun rose above an impressive panorama of snow-clad summits but we had little appreciation for the beauties of nature at that moment, for our truck broke down with engine trouble. Chilled, in spite of sheepskin coats, we crowded around a grass fire, until the chauffeur had fixed the damage. The potent native arak is good medicine in such events. The pass of Bashm was open. We slipped across

and down the sharp serpentines leading to Amiriyeh, where the road branches off to warm Mazanderan.

The mountain and pass of Firuzkuh was looming ahead, its snow-capped summit and slopes glistening in the sunlight [Plate CLXX, A]. The most difficult leg of the trip was before us. We climbed up in relay fashion from step to step. The pass had been opened again by the road workers, but parts of the stretch were covered with ice. Therefore, the cars ground their way up individually, sliding back at times in spite of chains. Whenever a car had gained a platform, the next one followed, and so on. It was hard going on Firuzkuh.

Night was falling. The Ministry of Education in Teheran had been informed about our departure from Damghan. Our coming had to be reported in order to receive instructions as to the destination of the antiquities. Thus we went ahead in the speedy touring while other members of the staff were distributed in the trucks.

In Teheran, Professor André Godard, the Director of the Antiquity Service, informed us that the antiquities should be brought into the compound of the Ministry [Plate CLXX, B], where we received, on the following day, excellent accommodations for the material and for laboratory work.

The hibernation quarters were in an attractive house in Chahar Rah Seid Ali, where also Giza the gazelle, Wolf the camp hound, and 'Pidar Sukdeh' the hawk found a home for the winter months.

After Christmas was past, regular office hours were kept in our 'museum'. There the photographer and the artist installed their studios, and the various scientific records were continued by the rest of the staff. As the working-up progressed, we prepared with simple means the exhibit of the Damghan finds which was to coincide with their division between the Persian government and the expedition. The boxes in which the finds had been brought to Teheran were combined into pyramids and terraced platforms and covered with inexpensive cloth of various colors. Through the hands of the artist, the photographer and the other recording and checking staff members, the antiquities wandered finally to their places of exhibition [Plate CLXXI].

The white or banded alabasters and the copper vessels, tools and weapons with their green coat of oxide found impressive purple bases and backgrounds. On black steps the white stucco plaques and architec-



EXHIBIT OF FINDS IN THE MINISTRY OF EDUCATION, TEHRAN

tural units of the Sasanian palace were displaced, flanked by the two columns preserved. The numerous gray vessels of Hissar II and III ascended on cream-colored pyramids. Blue background had been chosen for the terraces of ornaments and small objects of stone and pottery. An impressive black pyramid was originally covered by the crania of the successive periods, but we changed our minds and in their stead arranged the more cheerful painted pottery vessels of Hissar I. A corner was filled with the finds of the Islamic test sites. A large storage vessel was in a central position, and, later on, the points of greatest interest, the graves of the Little Girl and of the Warrior, were again built up at either side of the alabaster pyramid in the same manner as we had found them on Tepe Hissar. On black draped tables the numerous figurines and glyptical objects were exhibited. The plans and maps completed by the expedition were spread under glass, and paintings and enlarged photographs ornamented the walls.

Besides our intention to produce an aesthetic pleasure in selected outside people that were to look at this exhibition, we considered the latter, for our own instruction and satisfaction, the ideal conclusion of a successful season.

The division was to take place towards the middle of March, prior to the departure of Mr. Godard for an inspection tour. A number of the photographs were still wanting, but we were told that the entire collection would be at our disposal until the completion of the work. His Exc. Karaghozlon, the Minister of Education, was greatly impressed by the display of our finds. He invited the Minister of the Court, H. H. Teymourache, and the entire Council of Ministers to visit the exhibition. On March 16 this body of the highest Persian officials arrived and were shown the remains of Persia's past. H. H. Teymourache drew the lot that determined the share of the Persian government.

The members of the United States Legation were particularly pleased with the exhibition showing the results of an American scientific enterprise. The representatives of Germany, France, Austria, and Poland, American tourists and business men, Persian officials, and our various friends equally enjoyed the display of the Daughan finds.

The written data were completed, but the artist, the photographer and the surveyor were still busy with the pictorial and topographical records.

Besides that, the digging weather had not yet started in Daughan. Thus, three of us, Lockard, White, and the writer, used the opportunity to make an extremely instructive dash to the South, across Luristan, to old Elam and Susa, where the excavation staff, Count R. de Mecquenem, Messrs. Unvala and Marquet, proved delightfully hospitable. Across the deserts we drove to Bushire on the Persian Gulf and north again to Shiraz, where the second aim of our pilgrimage was Persepolis. Here the esteemed Prof. E. Herzfeld and his staff are working under the auspices of the Oriental Institute of Chicago. We saw the most beautiful of Persian towns, Isfahan, and arrived again in Teheran on April 8, after a voyage of more than 3000 kilometers. At a future date we shall describe our experiences and impressions of this memorable trip.

Back in Teheran, we had to prepare the shipping of the American share of the antiquities. The share of the Persian government was delivered to the Ministry of Education as soon as our pictorial records were completed. Now, special boxes were ordered and the packing and the detailed listing of the contents of the cases started. The stuccos were wrapped in felt, the frail skulls turned into white globes by means of gauze and bandages soaked in gypsum. Each case contained series of inserted boxes separated by cotton and hay and all specimens were wrapped and filled with cotton. Packing is tedious work.

Applications for the export of the shipment were filed at the Customs, the Ministry of Education, and the Ministry of Commerce, to be endorsed by the Council of Ministers. One of the best friends of the expedition, Mr. J. Z. Mirzayantz, was here of greatest assistance. At last, the boxes were ready for the inspector of the customs. An official came, checked and sealed the forty-seven cases destined for Philadelphia. Shipping arrangements were made through the Mesopotamia Persia Corporation (Mespers), and our work was done. Mr. Mirzayantz, aided by our efficient business agent, Mr. H. Petrossian, saw to it that the shipment was finally delivered to Mespers, after the export permits had been received. Our finds were thus in good hands, and we did not have to wait until the formalities were finished. The second season at Tepe Hissar could start. Prior to our departure for Daughan, however, we found an opportunity to express our deeply felt appreciation of the sympathetic assistance by

the Persian government, by presenting photographic albums with enlargements of excavation scenes and finds to H. M. Shah Pahlavi, H. H. Teymourache, and H. Exc. Karaghozlou. Then we left our winter quarters in Teheran to start Season 1932.

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